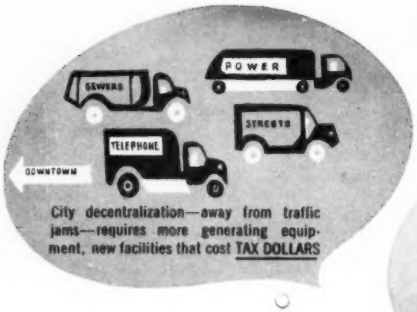
ELECTRICAL WORLD *News Issue*

APRIL 2, 1949

A McGRAW-HILL PUBLICATION

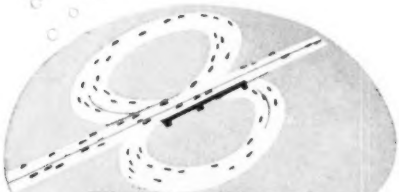
Dr Vladimir K. Zworykin, 1948 Lamme Medalist



City decentralization—away from traffic jams—requires more generating equipment, new facilities that cost TAX DOLLARS

You carry the tax load in your town!

Decentralization also means less business downtown. Property values drop! TAX RATES CLIMB!

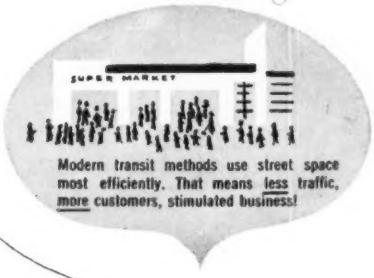


Million-dollar superhighways and freeways mean SOARING TAX RATES

ELECTRICS CARRY MORE PEOPLE FASTER

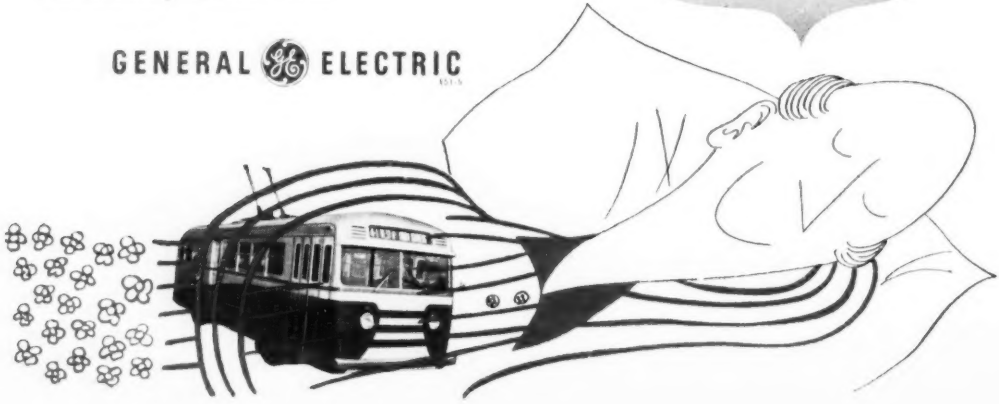
You have the biggest stake in transit. Let us help you promote sound transit practices. Modern *electric* transit attracts more people to public transit, greatly reduces traffic congestion.

Apparatus Department,
General Electric Company,
Schenectady 5, New York.



Modern transit methods use street space most efficiently. That means less traffic, more customers, stimulated business!

GENERAL ELECTRIC



The Electrical Week

Wide divergence of opinion among Hoover Commissioners on federal power activities had one result. The Commission made no recommendations on that subject. However, four minority opinions have been publicized . . . The Truman administration has started to make good its campaign promises on public power. In the legislative hopper are three bills which provide ample funds and include the money needed for two steam plants, TVA's New Johnsonville and Reclamation's Delta in California . . . At Savannah, the Southeastern Electric Exchange was told that determined management will enable rates to be raised peaceably, expansion to be financed, and effects of inflation to be met. Along these lines, forceful selling and ingenious engineering will help.

The government of India has signed an agreement with a British and an American firm to draw up project reports for the establishment of a state-owned factory for the manufacture of electrical goods.

With additional power available from Arkansas Power & Light Co. the Reynolds Metals Co has scheduled initial operation of its third potline at the Jones Mill aluminum reduction plant for April 15. The additional metal is slated for conductor for the Wisconsin Electric Cooperative.

In 1948 Canada exported 1,743,067,000 kwhr of energy to the United States. This was the lowest total export since 1936.

If you have a vague recollection of having seen the 1949 Red Cross Campaign poster (the one showing the driver of a mobile disaster unit getting directions) some years ago, it may have been in ELECTRICAL WORLD. The picture on which the poster is based appeared on EW's centerspread, June 14, 1947, because it won first place in the 1947 Red Cross cover contest for industrial publications, in this case, the *News Meter* of San Diego Gas & Electric Co

Life is going to be brighter in the British Navy. The Admiralty has announced that fluorescent lighting will be introduced gradually into mess spaces, recreation rooms, surgeries, workshops, and offices of warships.

That $18.5 billion figure for authorized, proposed, and "under construction" projects of the Bureau of Reclamation and the Corps of Engineers, which was developed by the long-suppressed "Roberts report" to the House Appropriations Committee last year, got some implied substantiation from the Hoover Commission's Task Force Report on Natural Resources. The latter report says that "additional authorizations for water development alone amount to over $10 billion; and further projects involving more than $10 billion more already are included in the advance plans of the agencies concerned."

To build its electric range load, the Boston Edison Co is offering free wiring for range service in single and two-family homes.

One draft of Columbia Valley Authority legislation, asked two months ago by President Truman, provides that nothing in the law shall affect or interfere with existing state water laws, or annual existing water rights, according to the Salem, Ore., Capital Journal. But CVA would be allowed to set maximum acreages for farms receiving irrigation water from its developments. Both these points are among the primary issues involved in establishing a CVA.

Labor in the electrical construction field is uneasy, according to reports from the Cleveland area. An example: A foreman, out of a job because his project was finished, was offered a job as a lineman on another company project in Michigan. He asked all sorts of questions about wages. When asked why he was so interested in the subject, he replied that the workers were all afraid of a pay cut, no matter what the business agents said.

REA Administrator Wickard's pattern for federal power generation: "We can double our generating capacity by proper development of these (federal hydroelectric) resources. Fortunately in many instances they are situated adjacent to plentiful supplies of cheap fuel which can and should be used for firming up the hydro generators."

About a third of the coal used in electric generating plants last year was mined in West Virginia.

Notes From The News

The governors of the six New England States have voted to set up a permanent New England Association of public utility regulatory agencies "for the purpose of cooperating with each other in the various problems involved in public utilities regulation" . . .

Continued on following page

There are electric blankets and electric sheets. Now we have the electric bed, an invention of an Idaho man. It is intended for hospital use . . . An X-ray machine capable of taking pictures through 16 in. of steel has been dedicated at the Naval Ordnance Laboratory at White Oak, Md. . . . The CIO United Electrical Workers have come out for a fourth-round wage increase but did not say how much . . . In Arlington, Mass., a 21-year-old war veteran built an electric chair, strapped himself in, and committed suicide . . . Michigan State College, East Lansing, has opened its new Electrical Engineering Laboratory . . . A nest of an Australian magpie made 95% of metal and containing 342 ft of wire was found recently. Since the birds like to build their nests on crossarms of transmission lines, it is no wonder that some Australian utilities have ordered line crews to pick up all wire scraps after completing a job.

Consolidated Edison Co of New York, which won a stay of a PSC order cutting electric rates, will reimburse its electric customers for the overcharge and pay them 5% interest in addition if the PSC is finally upheld by the courts . . . General Electric Co has reduced the bulb size of its 75-w incandescent to that of the present 60-w size. A new coiled-coil filament construction is responsible . . . In the Lake Coeur d'Alene watershed, a Washington Water Power Co snow survey crew found the water content of the snow to be 32 in. This is only 0.5 in. short of the record . . . Temperatures of 459 deg below Fahrenheit will be commonplace in a new 250,000 low-temperature laboratory just completed by General Electric Co at Schenectady . . . The Atomic Energy Commission has named a permanent three-man personnel security review board to hear appeals from workers facing dismissal on security grounds.

Legislation:

Congress has sent to the White House a bill continuing for another 15 months—through June 30, 1950—the suspension of the 4¢-a-lb import duty on copper . . . Pennsylvania's boroughs that furnish electricity would be authorized to make contracts for exchange of current among themselves under terms of a proposed bill . . . A Democratic-sponsored amendment to the Wisconsin constitution would enable the state to appropriate money for creation of districts for power production and water and soil conservation . . . A California Legislature committee has killed a bill allowing county construction of hydro generating plants as part of local water-use programs.

Power companies in Pennsylvania would be required to furnish enough current to permit full-capacity operation of appliances under provisions of a bill introduced in the Legislature . . . Bills to replace Wisconsin's anti-strike law with a system of voluntary mediation, arbitration, and fact-finding boards were killed by the Legislature. Instead the strike ban was extended to electric cooperatives. . . . Measures have been presented to the Pennsylvania Legislature asking that the original cost, less depreciation, of public utility properties be accepted as fair value on which a fair return is to be based in determining rates.

Financial:

Two companies attributed fluctuations in income to water conditions. Portland General Electric Co's net income for the 12 months ended Feb 28 was $2,231,230, or $440,402 less than the same period a year ago. Nearly all the drop occurred when frozen streams reduced hydro plant output. New England Electric System reported that improved water conditions brought its net income for the two months ended Feb 28 to 28¢ a share, as compared to 14¢ a share for the same period in 1948 . . . Idaho Power Co has asked FPC authorization for issuance of $4 million in $20-par-value common stock and $1 million in 4% preferred with a $100 par value. The company also asked permission to issue $4 million in short-term bank notes for interim borrowings during 1949.

Directors of Southern Co, a wholly-owned subsidiary of Commonwealth & Southern Corp, have authorized purchase of 100,000 shares of Mississippi Power Co common for $2 million. After the sale Southern will own all Mississippi Power's common . . . Authorization for sale of 320,000 shares of Arkansas Power & Light Co common for $4 million to Electric Power & Light Corp has been asked from the Arkansas Public Service Commission. Proceeds would pay for recent and planned improvements. . . Otter Tail Power Co is seeking FPC okay for issuance of $3 million in 30-year 3¼% first mortgage bonds, to be dated Mar 1, 1949. It also wants the Commission to raise the ceiling set on the company's short-term unsecured notes from $2.5 to $4 million . . . Mountain States Power Co plans sale this month of $2 million in 3¼% 30-year first mortgage bonds and 50,770 shares of no-par-value common stock . . . Wisconsin Electric Power Co is offering stockholders until April 14, a block of 226,093 additional shares of common stock at $15 a share on the basis of one new share for each ten owned.

ELECTRICAL WORLD, Published weekly by McGraw-Hill Publishing Company, Inc. Publication Office, 99-129 North Broadway, Albany 1, N. Y. Editorial and Executive Offices, 330 West 42nd St, New York 18, N. Y. James H. McGraw (1860-1948), Founder; James H. McGraw, Jr, President; Curtis W. McGraw, Vice-President and Treasurer; Eugene Duffield, Executive Assistant for Publications; Nelson Bond, Director of Advertising; Joseph A. Gerardi, Secretary; J. E. Blackburn, Jr., Director of Circulation. Subscription rates: Single copy 35 cents. In the United States, $6 a year, $9 for two years, $12 for three years. Canada, $7 for one year, $11 for two years, $14 for three years. (Canadian money at par.) Pan-American countries, $15 for one year, $25 for two years, $30 for three years. All other countries $20 for one year, $30 for two years, $40 for three years. Entered as second class matter, November 16, 1936, at the Post Office at Albany, N. Y., under the Act of March 3, 1879. Printed in U. S. A. Copyright 1948, by McGraw-Hill Publishing Company, Inc. All Rights Reserved. Cable address McGRAW-HILL, New York. Member A.B.P. Member A.B.C.

Power Policy Splits Hoover Group

Wide Divergence of Opinion Results in No Recommendations on Government Power Activities; 4 Minority Reports Contain Conflicting Suggestions

THE HOOVER Commission's facade of unanimity collapsed this week under the impact of its final report—that on federal business enterprise.

So deeply was the group split on the rights and wrongs of the federal government in the electric power business that it made no recommendations on that subject whatsoever. Instead it issued a series of conflicting minority statements, some of which attacked the Commission's own task force reports on power almost savagely.

No Policy Change Expected

As a result of its failure to reach any recommendation on power as an activity of the federal government, little if any legislative change in United States power policy can be anticipated as an outgrowth of the Hoover Commission work on the subject.

In dealing specifically with the federal government's proprietary power activities, the 12-man commission—established by the 80th Congress to study and recommend on reorganization of the federal government—split into four groups. One, headed by Chairman Herbert Hoover and including former Civil Service Commissioner Arthur S. Flemming, George H. Mead, former SEC Commissioner Joseph P. Kennedy, and Rep Clarence J. Brown, agreed in substantial measure with the findings of its two power task forces. This group made six recommendations, including those which would have:

Hoover's Own Recommendations

1. Congress define priorities of use for multiple-purpose projects, with the suggestion that domestic water come first; irrigation, second; flood control, third; navigation, fourth; and power, last, a by-product and subordinate to all else.

2. Congress determine a national federal power rate policy, with FPC to set rates under it.

3. Congress consider, for every project, whether it can sell federal output at the bus bar before it authorizes federal transmission.

4. FPC prescribe federal power accounting.

A second group, headed by Vice-Chairman Dean Acheson, with James K. Pollock and James H. Rowe, Jr., as members, dissented strongly. This group complained that the Commission in the federal business enterprise report violated its own rules of conduct and entered the policy field it had meticulously stayed out of in the previous 17 reports. It agreed that more consistency in treatment of various federal power enterprises would be fine and that inter-agency competition

How Much of Your Light Bill Is Taxes?

Kilowatt-hours per month	15	25	40	100	250	500
BPA objective	$0.75	$0.75	$1.20	$2.50	$4.00	$5.50
Portland, Oreg.						
Portland GE tax rate in 1946, 13.91 percent of electric revenue, tax equivalent	.85	.85	1.32	2.85	5.12	5.70
	.12	.12	.18	.40	.71	.79
Bill less tax	.73	.73	1.14	2.45	4.41	4.91
Resultant below BPA	.02	.02	.06	.05		.59
Resultant above BPA					.41	
Seattle, Wash.	.75	.80	1.28	2.72	5.10	5.70
Puget Sound P. and L. tax rate in 1946, 20.92 percent of electric revenue, tax equivalent	.16	.17	.27	.57	1.07	1.19
Bill less tax	.59	.63	1.01	2.15	4.03	4.51
Resultant below BPA	.16	.12	.19	.35		.99
Resultant above BPA					.03	
Spokane, Wash.	.59	.89	1.34	2.76	4.38	6.08
Washington water power tax rate in 1946, 25.13 percent of electric revenue, tax equivalent	.15	.23	.34	.70	1.11	1.54
Bill less tax	.44	.66	1.00	2.06	3.27	4.54
Resultant below BPA	.31	.09	.20	.44	.73	.96
TVA area municipal plants:						
Chattanooga	.75	.75	1.20	2.50	5.00	6.90
Knoxville	.75	.75	1.20	2.50	5.00	6.90
Memphis	.75	.75	1.20	2.50	5.00	6.90
Nashville	.75	.75	1.20	2.50	5.00	6.90
Atlanta, Ga.	.75	.94	1.50	3.10	5.60	8.10
Georgia Power Co. tax rate in 1946, 18.9 percent of electric revenue, tax equivalent	.14	.18	.28	.59	1.06	1.53
Bill less tax	.61	.76	1.22	2.51	4.54	6.57
Resultant below municipal	.14				.46	.33
Resultant above municipal		.01	.02	.01		
Birmingham, Ala.	.70	.81	1.30	2.75	6.13	9.75
Birmingham Electric Co. tax rate in 1946, 11.15 percent of utility revenue, tax equivalent	.08	.09	.14	.31	.68	1.09
Bill less tax	.62	.72	1.16	2.44	5.45	8.66
Resultant below municipal	.13	.03	.04	.06		
Resultant above municipal					.45	1.76
Mobile, Ala.	.75	.94	1.50	3.10	5.60	8.10
Alabama Power Co. tax rate in 1946, 22.3 percent of electric revenue, tax equivalent	.17	.21	.33	.69	1.25	1.81
Bill less tax	.58	.73	1.17	2.41	4.35	6.29
Resultant below municipal	.17	.02	.03	.09	.65	.61
Cleveland municipal	.60	.80	1.19	2.65	5.40	9.15
Cleveland Electric Illuminating Co.	.60	1.00	1.55	3.35	6.73	10.48
CEI tax rate in 1946, 18.31 percent of electric revenue, tax equivalent	.11	.18	.28	.61	1.23	1.92
Bill less tax	.49	.82	1.27	2.74	5.50	8.56
Resultant below municipal	.11					.59
Resultant above municipal		.02	.08	.09	.10	
Los Angeles municipal	.72	1.00	1.42	2.77	4.90	6.65
Long Beach, Calif.	.89	1.24	1.76	3.11	5.76	8.26
Southern California Edison Co. tax rate in 1946, 23.31 percent of electric revenue, tax equivalent	.21	.29	.41	.72	1.34	1.93
Bill less tax	.68	.95	1.35	2.39	4.42	6.33
Resultant below municipal	.04	.05	.07	.38	.48	.32
Resultant above municipal						

SOURCES: Bills in 1947, FPC-R-33; taxes in 1946, FPC-S-55.

THIS TABLE is one of the exhibits in a Hoover Commission Task Force report on Water Resources Projects. It drew criticism from one group of dissenting Commissioners. In each rate class, public power rates are compared with private power rates less taxes. Dissenters argued that the table makes no provision for taxes paid by public power

should be eliminated where possible.

But these three commissioners turned a scathing dissent directly at the reports prepared by Haskins & Sells, a national accounting firm, and by A. B. Roberts, Cleveland consulting engineer.

"In our opinion," these commissioners declared, "this is a situation in which accountants have run riot—in a field of governmental policy which they do not understand, or if they do, are utterly unsympathetic toward . . . Even in the accounting field, we are not too sure about the task force analysis . . . We feel these reports are 'special pleading' and not impartial analysis."

Senator Aiken Dissents

Commissioner George H. Aiken, Republican Senator from Vermont, filed a dissenting statement which held that the Roberts and Haskins & Sells reports "follow so closely the arguments which the private power interests present in opposition to public water resource development that the general welfare viewpoint does not seem properly represented."

Retiring Defense Secretary James Forrestal dissented also, primarily on non-power aspects of the report, but he asserted the same complaint that Acheson's group and Aiken expressed about the Haskins & Sells and Roberts reports. All of them noted the failure of these reports to look at federal power activity from the viewpoint of the "broad social considerations" which motivate federal water development.

Affect Federal Power Activities

Certain of the recommendations which the Commission made on other aspects of the federal business enterprise report bear on federal power activities. These include recommendations that:

1. Government corporations make major capital additions only with Congressional approval and from appropriations.

2. All government corporations charge interest during construction.

3. Certain agencies, including REA, either earn their administrative expenses or declare them as subsidies to their programs in seeking appropriations.

4. Certain agencies, including the Reclamation Bureau, report yearly on the extent to which earned income fails to cover interest on federal capital, losses on loans or investments, and operating expenses.

5. Receipts from normal activities be paid to the Treasury and operating funds be derived from appropriations.

The Commission made no recommendation affecting REA's lending authority, although it did recommend substantial changes and consolidations in the authority of numerous other lending agencies. Throughout the entire report on federal business enterprise, it was evident that all Commissioners were anxious for true costs to be shown clearly and for a general simplification of government corporation statements so that subsidies, losses, profits, and costs could be more readily ascertained, particularly by Congress.

Haskins & Sells Proposals

The Haskins & Sells report covered much more than federal power activities. The Roberts report covered water resources projects. Among the Haskins & Sells power recommendations were that:

1. A screening board study proposed power and reclamation projects; review budget requests during construction; promulgate rules for and review cost allocations, annual and repayment reports; recommend on proposed projects; and review existing projects.

2. Congress reconsider TVA's existing repayment schedule and authorize specifically all new TVA construction except that performable from a $1 million emergency fund.

3. The Government Accounting Office make business-type audits of all power projects.

4. Reclamation Bureau accounting systems and organization be revised.

5. FPC's authority over federal hydro projects be made uniform.

6. Federal energy be sold at the busbar where feasible.

7. Federal rates not be considered "yardsticks."

8. Revolving funds for federal business be limited to working capital.

9. Federal business enterprises adopt the corporate form.

10. Appropriations for construction be shown separately from those for operation and maintenance.

11. Borrowings by government corporations and business agencies be made only from the Treasury.

12. All reimbursable appropriations bear interest.

Roberts Report Recommendations

Among the recommendations in the Roberts report were that:

1. Local project contributions again be required.

2. States control non-navigation water uses at federal reservoirs.

3. Federal power policy include utilization of existing facilities in marketing federal output.

4. Federal energy rates be no higher than the cost from an alternate source.

5. The federal government not build or buy thermal plants whose output is for sale.

6. Thorough review, independent of the Reclamation Bureau or Corps of Engineers, be made of all project plans.

7. In justifying projects, more emphasis should be laid on the relations of all project revenues to all project expenses.

8. FPC initiate rate studies on all federal projects and have final jurisdiction over rates and contract terms, in cooperation with state commissions.

9. Engineering design and construction now carried on by the Corps of Engineers and the Bureau of Reclamation be merged into a new department of works or natural resources.

10. One set of books, rather than two, be kept by power projects, subject to post audit by the GAO. FPC rules, particularly on depreciation accounting and amortization, should be followed.

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1948 Lamme Medal to Go to Vladimir K. Zworykin

(See Front Cover)

Vladimir K. Zworykin, vice-president and technical consultant, RCA Laboratories Division, Radio Corp of America, Princeton, N. J., has been named to receive the 1948 Lamme Medal. Presentation will be made at the Summer General Meeting of the American Institute of Electrical Engineers in June at Swampscott, Mass.

The award was made for "his outstanding contribution to the concept and design of electronic apparatus basic to modern television."

A native of Russia, Zworykin was educated abroad. He came to America in 1919 and was naturalized five years later. From 1920 to 1929 he did research for Westinghouse Electric Corp. Then joining the Radio Corp of America, he was in turn director of electronic research, 1929-42; associate research director, RCA Laboratories, 1942-45; director of electronic research, 1946; and since 1947 has held his present position.

Zworykin holds fellowships in many American technical and scientific societies, including the AIEE, Institute of Radio Engineers, American Physics Society, American Association for the Advancement of Science, and the Franklin Institute.

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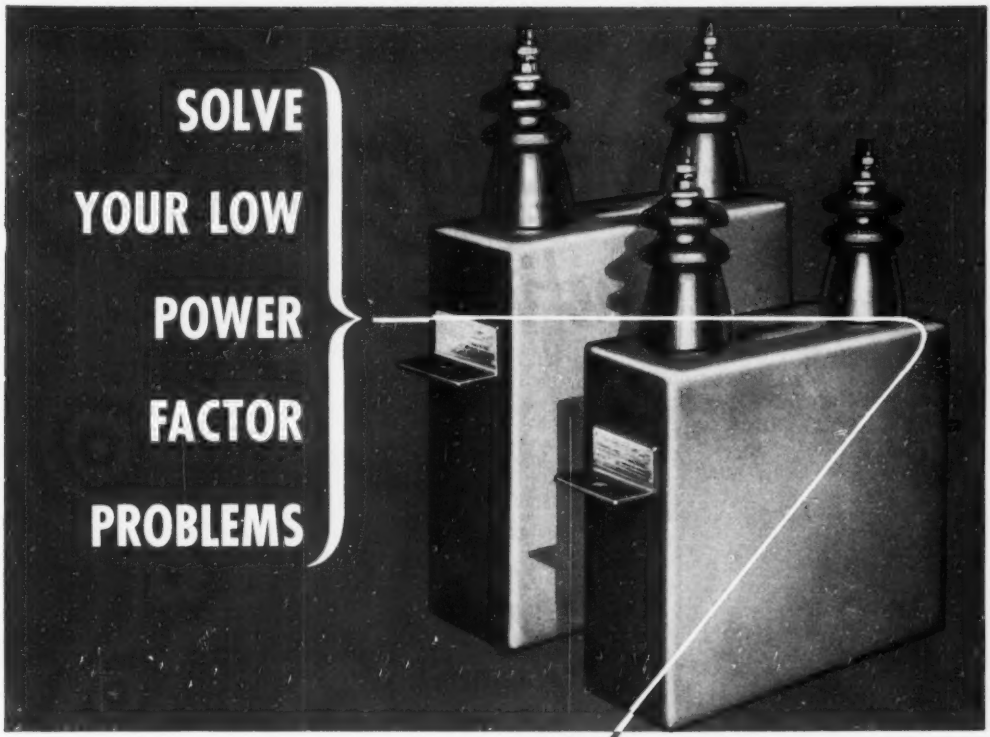
Shelby Gives Contracts

Contracts totaling $258,722 have been awarded at Shelby, Ohio, for installation of a new 5,000-kw turbine-generator, a surface condenser, and several other items of equipment for its power plant.



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Reduce reactive Kva by using shunt capacitor installations and increase your distribution system's ability to handle "pay" load. Proper use of capacitors will release generator, transformer and feeder line capacity that is now tied up with non-revenue producing reactive Kva. Further dividends are provided by capacitors in lowered line losses and decreased line voltage drop.

Moloney Capacitors are designed to give long, trouble-free service. They are built to the same high standard of quality that is characteristic of Moloney Transformers.

MOLONEY CAPACITOR FEATURES

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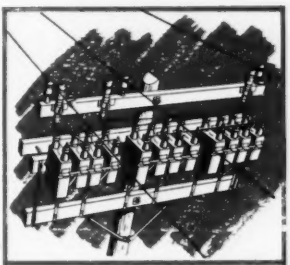
- ★ Copper-bearing steel cases—welded construction (16 gauge). Domed top to shed water.
- ★ Hermetically sealed to prevent entrance of moisture. Tanks are pressure tested for leaks.
- ★ Vacuum treated under elevated temperature to remove moisture and air. Then they are impregnated and filled with non-inflammable Askarel liquid. Suitable for outdoor or indoor installation.
- ★ Solderless type terminals arranged to take two conductors ranging from No. 8 solid to No. 2 stranded, permitting convenient connection in banks.



Capacitors provide the quickest and most economical means of relieving system overloads and improving voltage conditions where low power factor loads prevail. Capacitors may be obtained from stock, and installed costs are low... less than $10 per Kvar.

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says **Murray F. Gill,** ***President, Kansas Gas & Electric Co., Wichita, Kansas***

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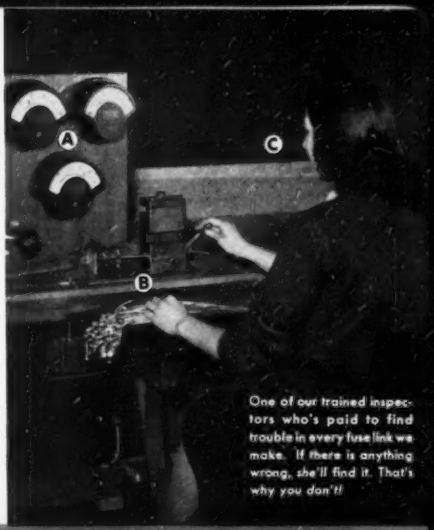
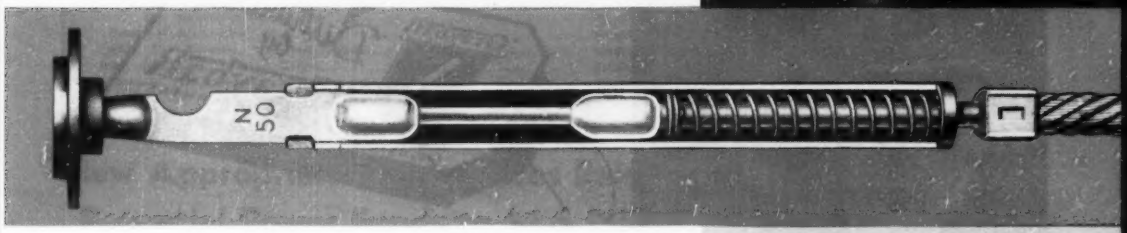
She bets we'll be wrong... in either case, YOU WIN!

Every L-M UNIFIT FUSE LINK is individually tested



One of our trained inspectors who's paid to find trouble in every fuse link we make. If there is anything wrong, she'll find it. That's why you don't!



One bad apple may spoil the barrel. One bad fuse link could make a lot of trouble for our customers. So, to assure complete reliability, we test every individual L-M fuse link. Not one in a thousand, not spot checking, but *every one*, gets the "works." Tested for accuracy! Tested for coordination! Tested for strength, and mechanical construction!

We think L-M is the only fuse link manufacturer giving 100% inspection. It takes more work—sure—but that's why L-M links have such an enviable reputation for accuracy—especially among men to whom precise coordination is important. For details on L-M's very complete line of fuse links, ask the L-M Field Engineer or write *Line Material Co., Milwaukee 1, Wisconsin.*

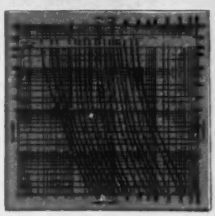
Fuse Coordination your problem?

In addition to making our fuse links so they will coordinate, we have developed a fairly complete manual on Fuse Coordination. Men who have used it have been very complimentary about it. If *you* have a fuse coordination problem and would like a copy, drop us a note.

*Only L-M can give you a link like the one shown above! This is a 50-amp spring type link in die-cast construction, an L-M exclusive process!

Here's what our inspectors check:

(A) Accuracy of Rating for Precise Coordination:
Every link must coincide closely with the melting and clearing time curves. Millivolt tests show whether the link is accurate. If not, out it goes—to the scrap pile, *not* to the customer. That's why you can depend on L-M links for coordination.

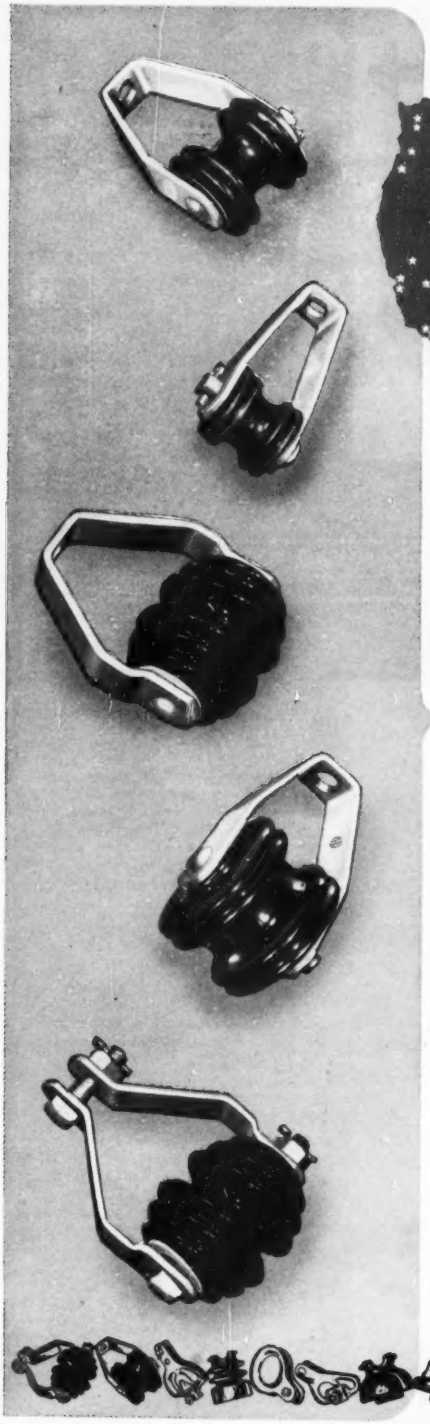


(B) Pull Test:
NEMA specifies a 10 pound test so that links won't pull apart needlessly under cutout tension. Ours pass that test with a good margin of safety—or you never get them!

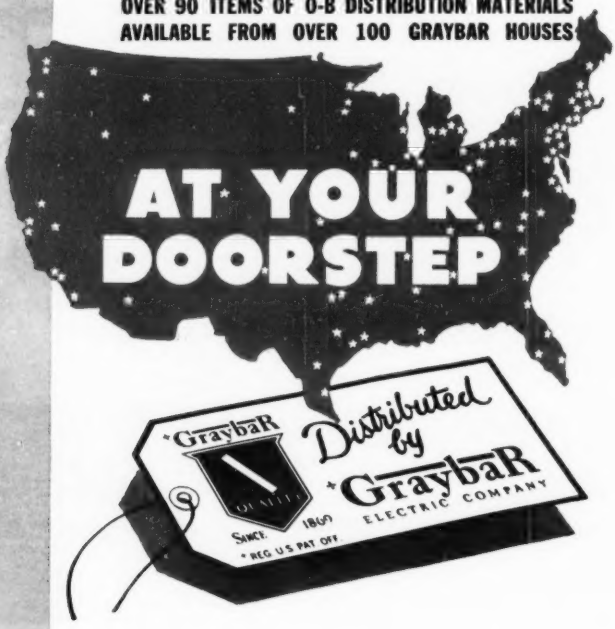
(C) Physical inspection:
To weed out any other possible faults. Every L-M link gets a pretty critical once-over—it's gotta be good!

LINE MATERIAL Fuse Links

Complete Coordinated Equipment for All Distribution Requirements



OVER 90 ITEMS OF O-B DISTRIBUTION MATERIALS AVAILABLE FROM OVER 100 GRAYBAR HOUSES



O-B Insulated Clevis Assemblies contain the finest spools money can buy--but cost no more money than is often spent for inferior spools. Wet process electrical porcelain, equal to that used in the largest insulators, goes into these O-B Spools. They offer double the electrical and mechanical performance of common spools, plus complete resistance to moisture absorption--and at no greater price.

Ready supplies of O-B Clevis Assemblies and other O-B distribution items are available through the widespread facilities of over 100 Graybar houses. Maintaining your own expensive inventories is unnecessary. Graybar will arrange this stocking for you, with delivery to "your doorstep" at regular prices.

Ohio Brass

MANSFIELD, OHIO

2038-H

Pending Appropriations for Public Power Projects

Army, Civil Functions, Fiscal 1950	**Total**	**$587,000,000**
Flood Control and Rivers and Harbors		$558,012,000
Interior Department, Fiscal 1950	**Total**	**$536,000,000**
Southeast power marketing		$70,000
Southwestern Power Administration, appropriations		$4,000,000
" contract authorizations		$5,000,000
Bonneville Power Administration, appropriations		$29,927,500
" contract authorizations		$15,725,000
Bureau of Reclamation	Total	$317,790,037
Bureau of Reclamation construction	Total $296,530,000	
Missouri Basin	$75,848,000	
Columbia Basin	$59,075,000	
Central Valley	$56,394,800	
(Includes $13,000,000 for power, of which $2,000,000 is for Delta steam plant)		
Davis Dam	$32,928,000	
Hungry Horse Dam	$20,400,000	
Colorado-Big Thompson	$18,275,000	
Deficiency Appropriations Bill	**Total**	**$538,000,000**
BPA, new appropriations		$6,047,800
" new construction authorizations		$1,452,200
Bureau of Reclamation		$19,685,500
Army, Civil Functions, Rivers and Harbors		$10,509,000
Army, Civil Functions, Flood Control		$20,000,000
Tennessee Valley Authority, New Johnsonville steam plant		$2,950,000

New Appropriations Measures Raise Potential Power Funds to $1.6 Billion

FULFILLMENT of campaign promises involving electric power moved into high gear this week as the Truman Administration's Congressional leadership threw two more money bills—calling for more than $1.1 billion—into the House.

The measures—regular fiscal 1950 appropriation bills for the Interior Department and the Army's civil functions—raised to $1.661 billion the total funds in appropriation bills involving electric power now before Congress. The other is the $538 million Deficiency bill.

Highlights of the two new bills' power provisions were:

1. An initial appropriation for the Reclamation Bureau's Central Valley steam plant.

2. Rejuvenation of the Southwestern Power Administration's three-year transmission program.

3. Establishment of a power-marketing staff in the Interior Department to handle Army generation in the Southeast.

4. Reversal of last year's restrictions on federal transmission construction in the Southwest, the Northwest, and California. Also, reversal of last year's restrictions on Reclamation force account work, personnel, and engineering studies.

5. Approval of west side transmission lines in the Central Valley, a step deferred in numerous previous bills.

6. A 15% cut in almost all construction funds requested by the Corps of Engineers and the Reclamation Bureau. It was based on an anticipated decline in construction costs. Both agencies were told they could come back for more if the cost decreases failed to materialize.

The Deficiency bill was reported to the Senate last week with funds for the Tennessee Valley Authority's New Johnsonville steam plant. The Committee failed to okay an amendment that would permit an appeal to federal courts questioning constitutionality of the plant. The Senate Committee also junked a portion of the bill that would have removed restrictions on salary payments to Reclamation Commissioner Michael Straus and Regional Director Richard Boke. As the House did, the Senate Committee forbade the Engineers to build Ice Harbor Dam, on the lower Snake River, until provisions were made for fish protection.

In the fiscal 1950 Interior bill, SPA and BPA had their transmission programs restored and Reclamation got the Central Valley west side lines it has been seeking for years. Reclamation's only transmission setback was on the Havre-Shelby line in Montana. It won a transmission fight in Colorado when the Committee rejected a proposal by Public Service Co of Colorado to wheel Reclamation power to preference customers for the Bureau. Instead of that, the House Committee approved a $661,000 fund to start construction of a 115-kv line from Brighton to Valmont to Flatiron to Fort Collins to Greeley. Several other lines opposed by the company were approved.

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FPC, Interior Conflict on Hydro Jurisdiction

The Federal Power Commission and Interior Secretary Krug's power staff are expected to pull the wraps off a backstage jurisdictional feud of several months' standing early in May.

The bone of contention is what jurisdiction, if any, FPC has over hydroelectric projects proposed on streams already under development by the federal government. Interior, in correspondence with the Commission, insists that FPC cannot entertain an application for a license on such a stream. FPC's reply has been to set hearings, starting May 12, on the case in point—an application by the Virginia Electric & Power Co.

Vepco is seeking a license for a hydroelectric plant on the Roanoke River, near Roanoke Rapids, Va. The site chosen by the company is 41 river miles below the Buggs Island reservoir and power plant being built on the same stream by the Army Engineers. The proposed project would be built at an estimated cost of $18,475,000. It would consist of a concrete dam and powerhouse with an installation of 98,000 hp of generating capacity.

The application was protested by the Interior Department, over the signature of Secretary Krug. The latter pointed out that the Engineers' plan for development of the Roanoke was approved in the Flood Control Act of 1944, in which the Buggs Island project was authorized. Interior's interest, Krug added, stemmed from Section 5 of the same act, which directed the Department to market energy from all hydroelectric projects built by the Engineers.

FPC's announcement of the hearings on Roanoke Rapids blistered with the declaration that it would receive data on its authority "under the Federal Power Act" to entertain the license application whether the project should be built by the Fedral Government, and whether the company's plans are best adapted to "a comprehensive plan" for development of the stream.

FPC announced that Vepco's Roanoke Rapids plans did not "conform" to recommendations of the Engineers for development of the Roanoke Basin.

ACTIVE AT CONFERENCE of Engineering and Operation Section of the Southeastern Electric Exchange were Lee C. McClurkin, front row, left, president, Savannah Electric & Power Co; E. W. Robinson, vice-president, Alabama Power Co, Section chairman; F. C. Morton, general superintendent, Savannah Electric; R. L. Harris, rear row, left, superintendent of production, Alabama Power, Production Committee, chairman; W. R. Doar, distribution engineer, Carolina Power & Light Co, Distribution Committee chairman; S. L. Muths, operating manager, Mississippi Power Co, Transmission Committee chairman

SEE Told Determined Management Can Overcome Difficulties of Utilities

RATES CAN be raised peaceably, expansion can be financed, and the effects of inflation can be met; but it will take determined management, forceful selling, and ingenious engineering. Such were the major themes at the conference of the Engineering and Operation Section of the Southeastern Electric Exchange, March 24 and 25, at Savannah. The 200 in attendance, largest number in history, were greeted by Lee C. McClurkin, the new president of Savannah Electric & Power Company.

C. B. McManus, president of Georgia Power Co, told of a talk before some 50 service clubs in Georgia, candidly describing the company's objectives and needs in a layman's language. As a result his company has been granted six rate increases (four for transportation functions) in the past year without any public opposition.

Costs of inflation are already creating for engineers and operating executives problems as great as any ever before posed, said Fischer S. Black, editor of ELECTRICAL WORLD. Outlays for power plants now constitute half the present expenditures and this tends to cover up some of the even larger increases for costs of distribution because the latter are relatively marking time in volume of activity.

For the future, Black saw an overall doubling of system facilities by 1955, with the later half provided at these inflated costs. The result could well be more than a 1% decrease in net return on investment unless engineers cut costs —capital, operating, and maintenance —with every bit of ingenuity they can muster and the commercial departments sell enough extra kilowatt-hours profitably to hold the gross and net up. This ought not to be too great a task because customers are now paying for electric service only 2/3 as much of their income as they did in 1940, actually 0.8 vs 1.2¢. That relative shrinkage of $23 per customer is what the salesmen can cultivate to keep the engineers' and operators' job a bit less urgent.

Tremendous growth in kilowatt-hour sales in the Southeast as compared with the national average was pointed out by L. M. Taylor, vice-president, Mississippi Power & Light Co. From 1940 to 1947 it was 110% and the predicted increase at the same rate of growth would be 128% of 1947 by 1960.

Seven experiments being tried by General Electric Co in the province of employee relations are bringing most promising results, according to W. V. Merrihue, manager of the activity for the Apparatus Department of the company. They embrace messages to the employees, job improvement, economics education, pre-information on major plant changes, the rumor-squelching clinic, and informative conferences for management and foreman brackets. Employees are beginning to sense that they "belong" and have significant jobs.

Microwaves have a definite future as a power system operating tool, said R. C. Cheek, Westinghouse central station engineer, because they can effectively relieve the greatly overtaxed carrier spectrum from short-haul duty. He cited the Pennsylvania Electric installation, soon to be described in ELECTRICAL WORLD.

Before expiration of the expected life of some plants now operating, coal may prove to be the only economically available fuel, said E. G. Bailey, vice-president of Babcock & Wilcox. Nor is it likely that synthetic oil made from coal can be used economically as a fuel either in boilers or gas turbines. He expressed firm confidence in the cyclone furnace and cautioned against blind elaboration of and dependence on automatic combustion controls.

Wall Construction Costs Vary

Study of wall construction materials by Georgia Power, prompted by an indicated brick cost of $3.50 per sq ft, showed a variety of alternatives ranging down to about $1 for corrugated Transite and the necessary girts with a saving about $0.75 per kw in plant cost, according to R. N. Benjamin.

Neither the gas turbine nor atomic power are likely to mature in the next ten years to the point of being truly competitive with large steam turbines, said J. R. Carlson in reviewing recent Westinghouse developments in the turbine field; 1,100 F temperatures are likely fairly soon. Reheat is not too attractive below 40 Mw.

Equipment Must Be Created

Few manufacturers develop mechanizing equipment for line construction and maintenance operations, said C. W. Mosley, manager, Construction Division of R. H. Bouligny & Co, adding that utilities and contractors have to create most of the assemblies. He showed a wide range of pole and structure setting rigs, mowers, harrows, chippers, trenchers, log and pole loaders, shear boats to exemplify what could be adapted for economy if volume is justifiably large.

Survey by T. S. Birdsong, Alabama Power Co, of the many varying methods of hanging transformer assemblies on poles resulted in the appointment of a sub-committee to report on the relative merits and electrical characteristics for comparison with the respective cost of each method.

Several unorthodox construction possibilities were suggested cautiously by P. G. Whitmore, Ebasco Services—among them mid-span service taps on lengthened spans, double-conductor single suspension transmission lad-

der use, and fused secondary networks.

Unit substation experience on the Virginia Electric & Power System revealed some limitations and troubles. They were enumerated by F. J. Zak, but he said the company is ordering such substations for appropriate locations.

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PEPCO Bond Proposal Rejected by Commission

The District of Columbia Public Utilities Commission has rejected a Potomac Electric Power Co proposal to sell $37 million in bonds to three insurance companies. The decision, which was handed down last week (Mar 23), followed one of the most unusual hearings in the Commission's history.

First, there was only one witness at the proceeding. He was Rep Emanuel Celler, New York Democrat, who "filibustered" at length against the Pepco application. Approval of the proposal, Representative Celler charged, ultimately would give the insurance firms control, "lock, stock and barrel," of the utility. His only interest in the case, he added, arose out of his close observation of insurance company financial operations.

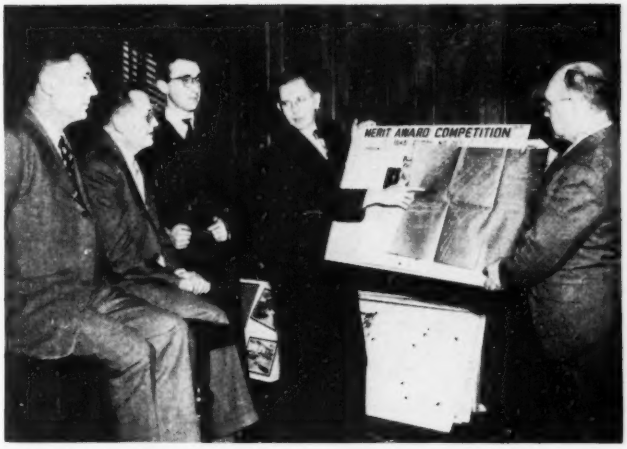
Representatives of two investment firms, Otis & Co of Cleveland and Halsey, Stuart & Co of Chicago, were present to protest Pepco's request for waiver of competitive bidding requirements. But neither they nor representatives of the utility testified after the Congressman had finished.

PUC Chairman James H. Flanagan subsequently announced that Celler's testimony had not been included in the record of the case because the Congressman had not been sworn. But, just the same, the Commission ruled the bond sale would not be in the "public interest."

Pepco proposed to use proceeds of the bond issue to repay $17 million of bank loan notes, to redeem 225,000 shares of 3.6% preferred stock, and to raise $8,018,750 for its construction program.

The PUC decision held that it would not be in the public interest to permit "the substitution of 3¼% debentures for 2 and 2¼% bank loan notes" or redemptions of the preferred stock "at a premium of $731,250".

Celler said he had not discussed the Pepco application with representatives of Halsey, Stuart or Otis & Co. Pepco officials declined comment other than the statement by its counsel that the company had no "alternative plan" for meeting its financial requirements.



220 WINNING ENTRIES on display this week at the Third International Lighting Exposition at the Stevens Hotel, Chicago, were selected by B. J. Martin, left, Chairman Carl W. Zersen, Walter McQuade, William T. Stuart, and Prof John O. Kraehenbuehl

AG&E Spending to Rise Almost 1/3 Through 1951

THE COUNTRY'S fourth largest integrated power system—American Gas & Electric—plans to increase its spending on plant expansion during the next 33 months to a rate almost one third above that at which it has been spending for the past two years.

Also, it will be getting more for its money in doing so, AG&E Pres Philip Sporn told New York's Society of Security Analysts this week. Generating units going in at the Twin Branch, Sporn, and other plants on the system this year will have a coal rate per kwhr 18% better than that of a unit which began operation only last year, Sporn said.

Industrial dispersion, spurred by the war, has a "Southern and Midwestern inclination," Sporn told the analysts. He cited substantial increases in industrial load throughout AG&E territory—even though no community in the area exceeds 150,000 population—as a demonstration of this fact.

Looking a decade ahead, Sporn predicted that, at the present rate of expansion, AG&E would need 2,000,000 kw more capacity in 1958 than it has today. That would be an increase of slightly over 1,000,000 kw above what the system will have at the end of 1951. Customers should total 1,405,000 in 1958, requiring 22,000,000,000 kwhr. An additional 4,000 employees will be needed by AG&E—almost double today's personnel total.

Spending for expansion during the past two years totaled $106,000,000, Sporn told the analysts. During the next 33 months, it will total $198,000,000. The comparable rates are $4,400,000 monthly during the past two years, $6,000,000 monthly through 1951.

New 137,500-kw machines going on the system this year will generate a kwhr for 9,300 Btu's. A 110,000-kw machine which began operation at the Tidd plant last year had a coal rate of 11,000 Btu's.

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Conciliator Gets Dispute

The dispute between the Union Electric Co of Missouri and the Operating Engineers Local 148 over the suspension of three station operators has been submitted to a federal conciliator. The operators were suspended until Apr 15 for their part in the wildcat strike at Venice Plant on Mar 15 (EW, Mar 26, p 72).

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Third Unit Ordered

The British Columbia Electric Railway Co has ordered a third 47,000-hp unit for its Ruskin, B. C., hydroelectric plant. Construction is to begin this month, and the unit is to go into operation in October, 1950.

Cities, PUD's Compete for Puget Sound Property

The drive to dismember the Puget Sound Power & Light Co is on. Involved at present are Seattle and Tacoma, which operate their own municipal electric systems, and the Kitsap and Thurston County Public Utility Districts.

Behind the drive is the recently enacted Washington legislation permitting two or more PUD's to acquire jointly all the properties of a private facility by negotiation (EW, Mar 19, p 11). A further spur for Tacoma was refusal of the Legislature to grant it permission to build power dams on the Cowlitz River.

Seattle Gets Answer

Seattle, which had demanded a "yes" or "no" answer as to whether Puget Power is willing to sell its facilities in the Seattle competitive area and its 62,000-kw White River and 20,300-kw Snoqualmie generating plants, got its answer. These properties "are for sale at a price which will include adequate compensation for the very substantial severance involved in the separation of the Snoqualmie and White River hydro power plants and associated facilities from the company's interconnected system." Pres Frank McLaughlin has informed the City Council thereof.

Tacoma is interested in the Puget Power transmission and distribution lines in the Tacoma area and in the White River and 23,000-kw Electron generating plants. McLaughlin described this as "the most destructive move ever made in the State of Washington for the expropriation of private power property." He said Tacoma forced the company out of business in that city some years ago and was now attempting "to rob Puget of its power supply and other facilities." Tacoma can get additional power from the Bonneville Power Administration, but the company has no such recourse.

Condemnation Authorized

The Tacoma City Council has adopted an ordinance authorizing city attorneys to start condemnation proceedings, with filing expected about Apr 7. Tacoma must act now, C. A. Erdahl, Tacoma commissioner of public utilities, declared because suits by PUD's have made it clear that "others are bound and determined to make a deal for disposal of Puget properties without regard to the interests of the people of Tacoma and Pierce County."

The PUD's have already started condemnation actions against Puget properties. Kitsap wants the White River Plant and Thurston the Electron Plant.

SEC RULINGS

Middle West Utilities Co of Canada has been granted an extension of time to and including Dec 31, 1949, on the order of exemption issued by SEC on May 24, 1939. Middle West also was permitted to apply on behalf of itself and its subsidiaries for a further extension. (Release No. 8890).

United Corp, as parent of the Niagara Hudson Power Corp, has been authorized to intervene as a party in the proceedings now before the commission involving Niagara Hudson Power. United owns 28.5% of the outstanding voting securities of Niagara Hudson Power. (Release No. 8896).

Utah Power & Light Co and its subsidiary, Western Colorado Power Co, have received authorization for Western to borrow from Utah from time to time during 1949 up to $700,000 for construction purposes. The borrowings will be represented by 3½% notes maturing not more than 11 months from date of issuance. (Release No. 8937).

Ohio Public Service Co has been authorized to sell $10,000,000 of 30-year first mortgage bonds and 361,840 additional shares of $7.50 par common stock, together with the sale by the Cities Service Co of 638,160 shares out of its holdings of 2,638,160 shares of the Ohio common stock, subject to the results of competitive bidding. Ohio will use the proceeds of its sale of bonds and stock to retire $3,000,000 of bank loan notes and for property additions and betterments. Cities Service will use the proceeds of its sale of Ohio stock for redemption of outstanding 5% gold debentures due 1958. Ohio also was authorized to amend its charter to grant pre-emptive rights to common stockholders and to increase the par value of its authorized and outstanding shares of stock from $5.00 to $7.50 per share through the transfer of $6,595,400 from earned surplus to capital surplus. (Release No. 8931).

MEETINGS

Edison Electric Institute—Annual Sales Conference, Edgewater Beach Hotel, Chicago, April 4-7; Accounting Division Joint Conference with American Gas Association's Accounting Section, Book-Cadillac Hotel, Detroit, Mich., April 11-14; Engineering Committees, Edgewater Beach Hotel, Chicago, May 2-4; Purchasing and Stores Committee, Jefferson Hotel, St. Louis, May 9-11;* Annual Meeting, Traymore Hotel, Atlantic City, May 31-June 2; Hydraulic Power Committee, Shirley Savoy Hotel, Denver, Colo., June 22-25.

Pennsylvania Electric Association—Systems Operation Committee, Wardman Park Hotel, Washington, D. C., April 6; Hydraulic Power and Systems Operation Committee Joint Meeting with U. S. Weather Bureau, Wardman Park Hotel, April 7; Hydraulic Power Committee, Wardman Park Hotel, April 8; Spring Meeting, Prime Movers Committee, William Penn Hotel, Pittsburgh, Pa., May 5-6; Transmission and Distribution Committee, Irem Temple Country Club, Dallas, Pa., May 12-13. Spring Meeting, Meter Committee, Abraham Lincoln Hotel, Reading, Pa., May 19-20.

Northwest Electric Light & Power Association—Engineering & Operating Section, Boise Hotel, Boise, Idaho, April 6-8; Business Development Section, Hotel Utah, Salt Lake City, May 9-11; Personnel Section, Benjamin Franklin Hotel, Seattle, Wash., May 25-27; Accounting & Business Practice Section, Vancouver Hotel, Vancouver, B. C., June 23-24.

Missouri Valley Electrical Association—Engineering Conference, April 6-8; Rural Roundtable, May 4; Sales & Rural Conference, May 5-6; Accounting Conference, May 12-13; Annual Meeting, May 17. All meetings at the Hotel President, Kansas City, Mo.

American Institute of Electrical Engineers—Conference on the Industrial Application of Electron Tubes, Statler Hotel, Buffalo, N. Y., April 11-12; South West District, Baker Hotel, Dallas, Texas, April 19-21; Summer General Meeting, New Ocean House, Swampscott, Mass., June 20-24.

National Association of Corrosion Engineers—Annual Conference and Exhibition, Netherlands Plaza Hotel, Cincinnati, April 11-14.

Western Metal Congress & Exposition—Shrine Convention Hall, Los Angeles, April 11-15.

Tennessee Valley Public Power Association—Annual Convention, Peabody Hotel, Memphis, Tenn., April 11-16.

Southeastern Electric Exchange—Annual Conference, Boca Raton Club, Boca Raton, Fla., April 13-15; Power Sales Conference, Henry Grady Hotel, Atlanta, Ga., May 5-6.

Midwest Power Conference—Sherman Hotel, Chicago, April 18-20.

Rocky Mountain Electrical League—Annual Spring Conference, Plains Hotel, Cheyenne, Wyo., April 21-22.

National Electrical Wholesalers Association—Annual Convention, Netherland Plaza Hotel, Cincinnati, Ohio, May 2-6.

Indiana Electric Association—Annual Young Men's Utility Conference, Ipalco Hall, Indianapolis, May 2-3.

American Society of Mechanical Engineers—Spring Meeting, Hotel Mohican, New London, Conn., May 2-4.

Missouri Association of Public Utilities—Annual convention, Muehlebach Hotel, Kansas City, Mo., May 4-6.*

Electrochemical Society—Spring Meeting, Benjamin Franklin Hotel, Philadelphia, Pa., May 4-7.

Southeastern Industrial Power Conference—Sponsored by General Electric Co. and Southeastern Electric Exchange, Henry Grady Hotel, Atlanta, Ga., May 5-6.*

American Public Power Association—Annual Conference, Fairmont Hotel, San Francisco, Calif., May 10-12.

Instrument Society of America—Spring Meeting, Royal York Hotel, Toronto, Canada, May 12-13.

National Fire Protection Association—Annual Meeting, Fairmont Hotel, San Francisco, Calif., May 16-19.

New Jersey Utilities Association—Spring Meeting, Seaview Country Club, Absecon, N. J., May 20.

Pacific Coast Electrical Association—Annual Meeting, Coronado Hotel, San Diego, Calif., May 25-27.

Public Utilities Advertising Association—Annual Meeting, Netherland Plaza Hotel, Cincinnati, Ohio, June 20-21.

American Society for Engineering Education—Annual Convention, Rensselaer Polytechnic Institute, Troy, N. Y., June 20-24.

American Society for Testing Materials—Annual Meeting, Chalfonte-Haddon Hall Hotel, Atlantic City, June 27-July 1.

Canadian Electrical Association—Annual Meeting Banff Springs Hotel, Banff, Alberta, Canada, June 28-30.

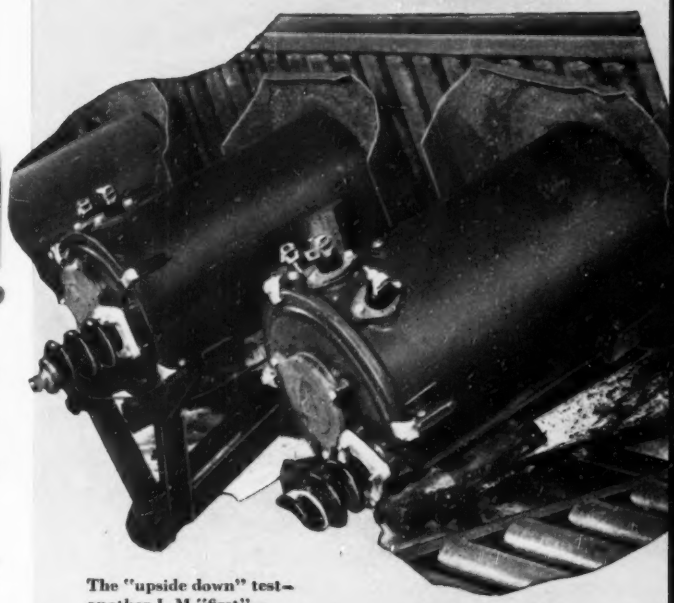
* Additions this week.

L-M "Round-Wounds"

ROUND WOUND COILS ON CORE

just don't leak!

. . . we've been using this "upside down" test to check transformer cover sealing since 1936



The "upside down" test—another L-M "first"—long ago!

Recently there's been a good deal of interest in transformer tank sealing, and a trend toward sealed tank construction, as recommended in the EEI-NEMA Joint Committee's Fourth Report.

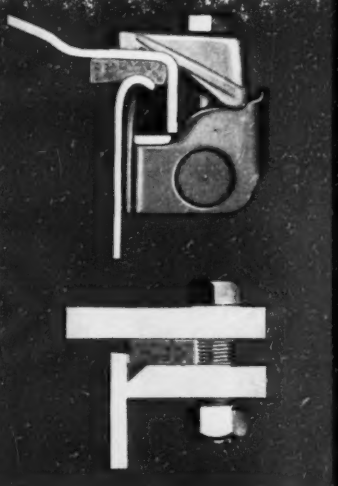
But tank sealing is an old story to Line Material. Years ago new customers used to get a shock because we shipped our transformers with the oil *inside*—everybody else sent it in a separate drum. But our customers soon learned that the oil didn't leak out of L-M transformers—and they stopped worrying.

Today L-M is generally recognized as the third largest manufacturer of distribution transformers. L-M is also known as the leader and pioneer in the development of sealed tank distribution transformers.

But it's not only the fact that the tanks on L-M "Round-Wounds" are sealed that's important. It's also *what* is sealed into the tanks that counts. In the L-M Round-Wound Transformer is the famous wound core that isn't cut, unwound, or disturbed in any way after annealing. There are the long, round coils wound directly onto the core. The design provides "Balanced Performance" with its many desirable characteristics—high short time overload capacity, excellent regulation, many other features.

You get more with "Round-Wounds." Why not get more information about them? Ask the L-M Field Engineer for the story—or write—**Transformer Division, Line Material Company, Zanesville, Ohio.**

how it works . . .



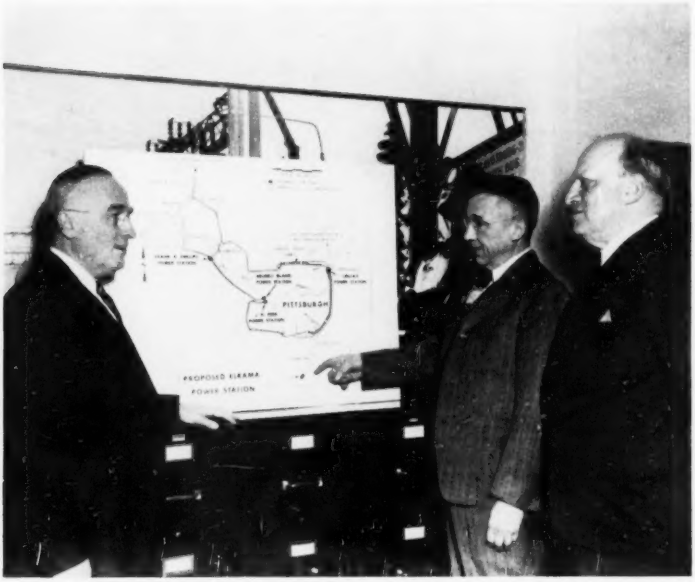
Cross section shows cover seals that keep oil in, keep moisture out. Upper illustration shows sealing of the round tanks, lower is of the square tank. Thick cork gasket, tightly clamped between rolled edge and cover, is unbroken by bolts or clamp parts. Bushing seals are equally good.

LM

LINE MATERIAL Transformers

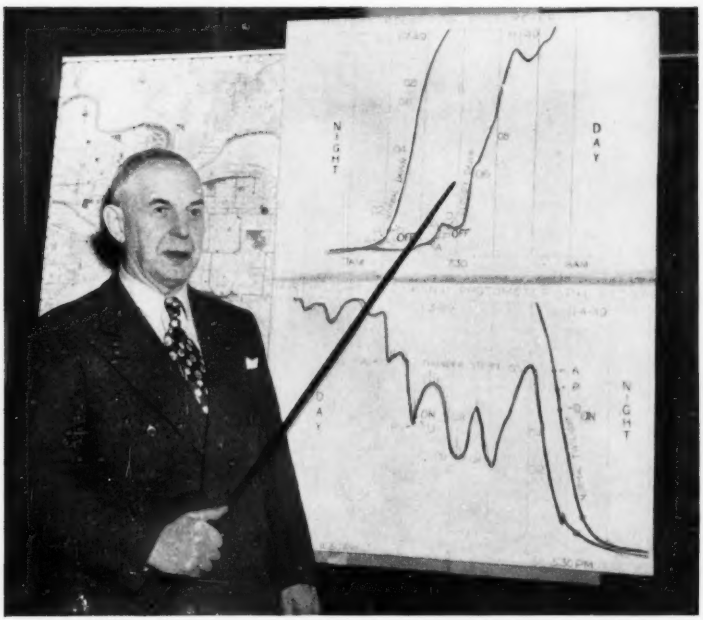
Complete Coordinated Equipment for All Distribution Requirements

THE INDUSTRY IN PIC



P. H. McCANCE, left, president of Duquesne Light Co, discusses proposed 190,000-kw Elrama Plant with Chief Engineer C. T. Sinclair, center, and W. G. Jens, operations vice-president

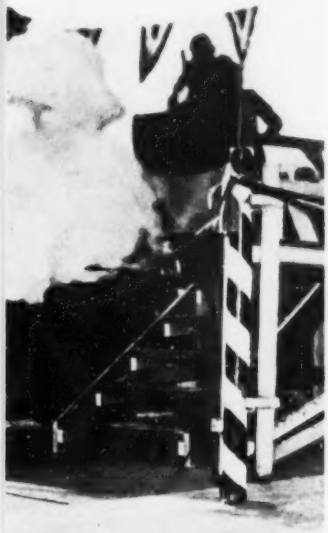
OAK RIDGE, TENN., becomes a full-fledg
impulses 15 miles away, breaks barrier to the



D. D. CLARKE, System Planning Department, Kansas City Power & Light Co, explains the light intensity graph which he developed for an automatic control system for street lights in Kansas City, Mo.

STREET LIGHTING SYSTEM in Kansas C
on substations. Devices were designed by F. Fe

TURES



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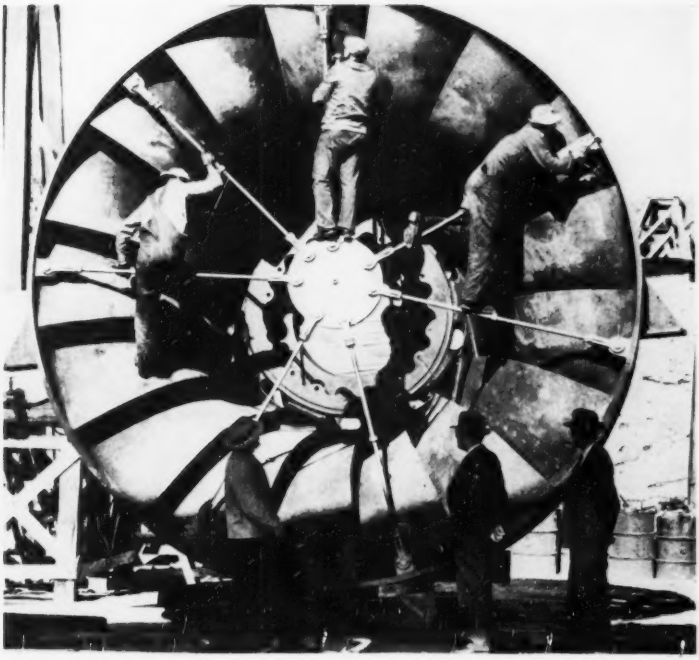
ch has been operated by the government

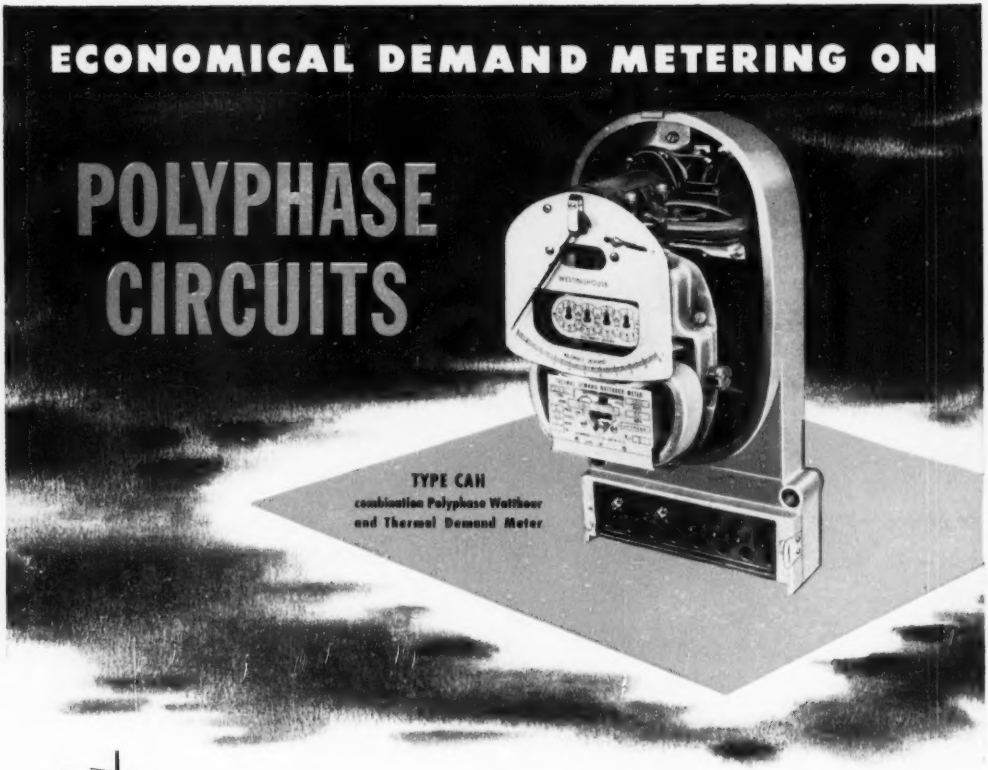


RIGGERS unbolt a steel "spider" used to brace in transit a turbine runner for one of the 45,000-kw units at Davis Dam power plant. The runner weighs 75 tons and is 17 ft in diameter and 9 ft high

controlled by four photoelectric devices installed
and M. Havenhill, KCP&L illuminating engineers

INTERIOR of photoelectric cell housing which turns Kansas City street lights off and on as light intensity varies is explained to Mildred Sprague of KCP&L's Lighting Institute by Frank Feagans

ECONOMICAL DEMAND METERING ON POLYPHASE CIRCUITS



...even where the load is small!

Here's your answer to the problem of low-cost demand metering on polyphase circuits . . . for the *full range* of loads.

YOU CAN BE SURE..
IF IT'S
Westinghouse

New, low-cost Westinghouse polyphase Demand Meters combine a standard polyphase Watthour Meter and a Thermal Demand Meter into *one* compact unit. Their inherently low maintenance characteristics make possible the sound economy of demand metering on small *or* large loads. Only one mounting is required . . . taking up little more space than one three-element polyphase Watthour Meter. Installation is greatly simplified. A low first cost is made possible through simplified design.

Whatever your requirements may be . . . kw *or* kva demand meters . . . single-phase or polyphase . . . Westinghouse has the meter that will give you the *accurate* and *economical* information you need. For complete information call your nearest Westinghouse office or write for C. S. 42-338, Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-40364

Westinghouse
PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

Watthour and Demand Meters for Any Job

December Energy Sales Rose 9.4% Over '47

Sales of electric energy to ultimate customers in December 1948, totaled 21,465,106,000 kwhr, the Edison Electric Institute reports. This was a 9.4% increase over the 19,617,041,000 kwhr sold in December, 1947.

Revenues from ultimate customers amounted to $390,128,300 in December,

Classification of Sales, December

Kilowatthr Sales, December	Million Kwhr 1948	1947	Percent Change
Residential or domestic	4,959	4,329	+14.5
Rural (Distinct rural rates)	472	379	+24.4
Commercial or industrial			
Small light and power	3,823	3,490	+ 9.5
Large light and power	10,720	9,934	+ 7.9
Street & highway lighting	270	251	+ 7.6
Other public authorities	557	530	+ 5.2
Railways and railroads			
Street & interurban	374	409	— 8.4
Electrified steam railroads	238	239	— 0.4
Interdepartmental	52	56	— 7.4
Total to ultimate customers	21,465	19,617	+ 9.4

compared with $351,460,200 in December, 1947, an increase of 11.0%.

For the 12 months ended December 31, the average use per customer advanced to 1,563 kwhr from 1,438 kwhr for the preceding year, an increase of 8.7%; the average annual bill to $47.05 from $44.43, an increase of 5.9%; revenue per kwhr dropped to 3.01¢ from 3.09¢, a decrease of 2.6%.

•

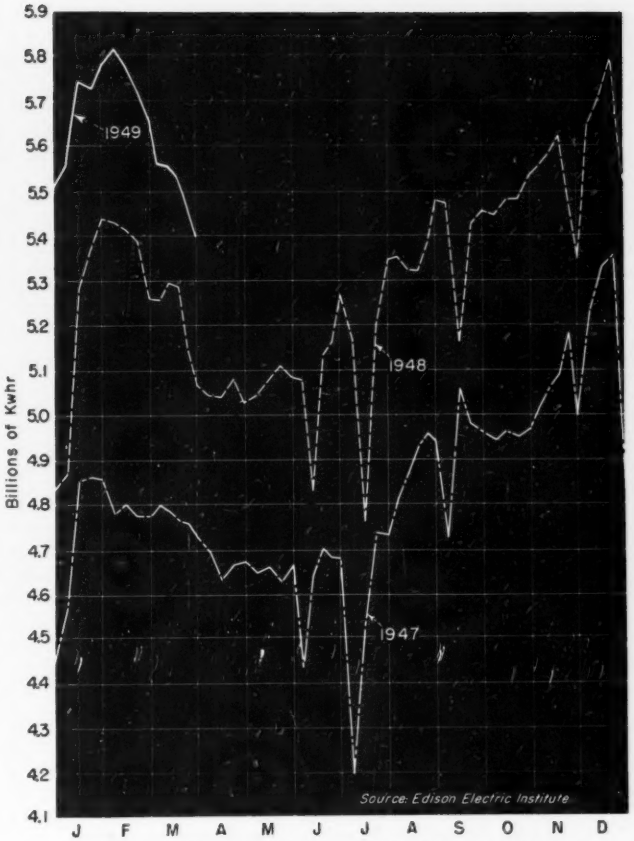
Municipal Strike Ends

The four-day strike by 15 employees of the Newport Electric System, Newport, Tenn., was settled March 23 when the linemen and office workers returned to work. The walkout came when the company refused to honor a contract the employees had drawn up after choosing an American Federation of Labor local to represent them as bargaining agent. The Newport Power Board had acted as a mediator in reaching a working agreement.

•

Ontario Hydro Buys Plant

Ontario Hydro-Electric Commission has purchased the Kaministiquia Power Co, Fort William, for $5,000,000. The plant, which includes the Kakabeka Falls generating station on the Kaministiquia River, approximately 18 miles west of Fort William, and nearby storage dams, was bought from the Abitibi Power & Paper Co. Its peak generating capacity is 36,860 hp.



Output Percent Increase Holds at 6.7

The amount of electrical energy distributed by the electric light and power companies of the country during the week ended March 26 amounted to 5,403,806,000 kwhr, according to figures released by the Edison Electric Institute. This total compares with 5,495,769,000 kwhr for the preceding week.

During the corresponding week last year, ended on March 27, the total output amounted to 5,064,555,000 kwhr, this year's figure representing an increase of 6.7%. This compares with a percentage increase of 6.8% for the week ended March 19.

The New England States remained in the minus column, reporting a drop of 2.5%. The Mid-Atlantic group continued in the plus column, but by a narrower margin, 0.9%, compared with 2.3% for the week ended March 19. Decreased gains were reported by the South Central, Rocky Mountain, and the Pacific Coast states. The largest individual increase was reported by the West Central States, which showed an increase of 15.3%. The Rocky Mountain group, though reporting a decreased gain, 12.1% compared with 14.7%, took second place.

Weekly Output, Millions Kwhr

1949	1948	1947
Mar 26 5,404	Mar 27 5,065	Mar 29 4,729
Mar 19 5,496	Mar 20 5,145	Mar 22 4,759
Mar 12 5,531	Mar 13 5,285	Mar 15 4,764
Mar 5 5,552	Mar 6 5,293	Mar 8 4,787
Feb 26 5,559	Feb 28 5,252	Mar 1 4,797
Feb 19 5,650	Feb 21 5,254	Feb 22 4,778
Feb 12 5,722	Feb 14 5,385	Feb 15 4,778
Feb 5 5,778	Feb 7 5,412	Feb 8 4,801
Jan 29 5,810	Jan 31 5,429	Feb 1 4,777
Jan 22 5,769	Jan 24 5,436	Jan 25 4,856
Jan 15 5,727	Jan 17 5,370	Jan 18 4,857
Jan 8 5,742	Jan 10 5,278	Jan 11 4,853

Percent Change from Previous Year

	Mar 26	Mar 19	Mar 12
New England	— 2.5	— 2.8	— 4.2
Mid-Atlantic	+ 0.9	+ 2.3	— 0.0
Central Industrial	+ 6.8	+ 6.1	+ 5.0
West Central	+15.3	+12.4	+ 9.4
Southeast	+11.3	+10.3	+ 8.9
South Central	+ 7.5	+ 9.3	+ 6.7
Rocky Mountain	+12.1	+14.7	+12.2
Pacific Coast	+ 8.2	+ 8.9	+ 4.7
Total United States	+ 6.7	+ 6.8	+ 4.7

IN THE INDUSTRY

RICHARD N. LARKIN

METICULOUS PROTECTION for the rights of minorities has been one of the foundation-stones of successful representative government in this country for almost two centuries. This principle is receiving classic reaffirmation in New York City today, with 11 top Communist leaders now on trial after a month of attack on the jury system itself. But what a pitching-around this principle is taking in the Deficiency Appropriations Bill which is expected to pass the Senate this week.

There are two violations of minority rights in that bill as it was reported to the Senate. One arises from the appropriation for TVA's New Johnsonville steam plant. The other arises in connection with a provision denying pay to Reclamation Commissioner Michael Straus and Regional Reclamation Director Richard Boke.

The New Johnsonville incident grew out of several U. S. Supreme Court decisions holding that federal taxpayers have no standing to maintain suit seeking a judicial determination as to the constitutionality of a federal statute. A number of people in the power business believe that TVA hasn't the right to build a steam-electric plant other than for purely national defense purposes, and they have the price of a court appeal to see whether they're right. But they're only the guys who pay the taxes and that, according to Massachusetts v Mellon and Frothingham v Mellon doesn't begin to be reason enough to let them visit the courts.

The Senate Appropriations Committee voted 11-10 against a provision in the bill specifically allowing a federal taxpayer to bring suit on the New Johnsonville issue. An attempt to put this provision into the bill was to be made on the Senate floor this week, but its prospects were doubly dim because of a parliamentary situation. This tangle becomes ironic indeed when you recall the Supreme Court packing fight. In that tussle, Democrats who supported President Roosevelt kept making the point that, under the 5-4 decisions which were so plentiful, just one associate justice of the high bench could say that we would or would not adopt as public policy some highly important programs—ideas basic to our way of life. If it wasn't right then, it's no more right today for one Senator, not an associate justice, to rule that a taxpayer can't seek relief in the courts. This "one-vote" argument is a ridiculous one, of course, but it certainly does show how times can change.

The Straus-Boke tangle grows out of last year's action by the GOP 80th Congress. It decreed that no pay would be allowed after last January 1 for a Reclamation commissioner or regional director who wasn't an engineer. It was a phoney then, and it remains a phoney today, even though it's complicated right now by President Truman's obdurate refusal to show Congress an FBI report on Straus. The House went along with Mr Truman's request that it junk the Straus-Boke rider. The Senate Appropriations Committee refused to lift the ban.

As a result, a minority of two men—who may or may not be the proper people for the jobs—face more persecution under a retroactive law.

It's easy enough to say that these two abuses of minority rights result, as they probably do, from political motivation, not from a long-term decay of representative government. Still, each remains a terrible way to run a government.

TECHNICAL NOTES

ARCHER E. KNOWLTON

Condensed extracts from "Major Sources of Energy"; a recent classical American Petroleum Institute paper by Eugene Ayres, Gulf Research and Development Co

Solar energy received by the earth's surface amounts to 30,000 times our present total energy requirement; 70% is absorbed only to be lost by radiation at night.

Timber from about 3 million square miles of forest (5% of total land area) would provide present annual energy requirements. It could be rendered continuous by reforestation but would be costly to gather and distribute.

Alcohol yield capability is said to be 90 gallon per ton of farm waste which amounts to 200,000,000 tons annually in this country.

Gasoline could be made from the hydrogen electrolyzed from water and the carbon extractible from the CO_2 of the air.

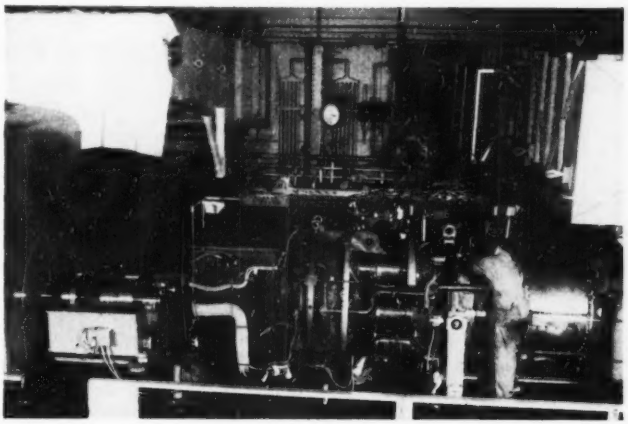
Total carbon in the carbon dioxide content of the atmosphere is enough to equal 1,000 times the carbon in the U.S.A. annual coal production.

Solar mirrors covering 25,000 square miles and costing 200 billion dollars (half the U.S.A. cost of World War II) could produce the present power requirements of the entire country.

Solar heat has been used to keep a properly designed house at 70 F even in sub-zero weather—as long as the sun is shining. Prefabricated houses designed for solar heating can be bought today.

Solar energy is recoverable in tropical sea areas by utilizing the 50 F differential between 90 F temperature at surface and 40 F at a 1,500-ft depth. France is backing such a 7,000 kw Claude plant on the African Ivory Coast.

MANUFACTURERS and MARKETS



FIRST COMBUSTION GAS TURBINE power plant to be built and sold in this country for central station use is shown as it was on test at the General Electric Co plant in Schenectady, N. Y. The unit, rated 3,500 kw, is for Oklahoma Gas & Electric

General Electric Sales Advanced 23% in 1948

General Electric Co and its consolidated affiliates did a record volume of business in 1948, sales billed to customers having totaled $1,632,700,000 or 13% more than in the previous peak wartime year of 1944 and 23% more than the $1,330,800,000 billed in 1947.

Net profit earned during 1948 amounted to $123,835,000, compared with the previous record earnings of $95,299,000 in 1947, equivalent to $4.29 and $3.30, respectively, on each share of common stock.

"The significant point," said Charles E. Wilson, president, "is that these earnings were equivalent to only 7.6¢ and 7.2¢, respectively, on each dollar of sales, whereas in prewar years the company's earnings averaged 11.6¢ on the sales dollar. This means that the increase in earnings resulted to a greater extent from the sale of more units at a lower rate of profit per unit than it did from higher selling prices."

"While rising costs of materials and wages made it impossible to maintain the price reductions put into effect early in 1948," Mr Wilson continued, "prices of General Electric products, on a weighted average basis, were only 4% higher at the close of 1948 than they were a year earlier, and during the year they averaged only 37% higher than in 1940, in contrast with a 95% increase since 1940 in the prices of all manufactured products, according to the index of the U. S. Department of Labor."

In submitting the annual report to the stockholders, Mr Wilson concluded, "General Electric's management continues to face the future with confidence and remains firm in its belief that the long-term trend in the use of electricity and electrical products will be upward in spite of any temporary set-backs due to economic conditions. . ."

•

Output Capacity Increased by Victor Insulators

The installation of another modern tunnel kiln at Victor Insulators, Inc, Victor, N. Y., has greatly increased production capacity, Howard Failmezger, vice-president and general manager, has announced. This new oil-fired kiln, now in operation, is the second one added within the past 18 months.

Addition of the new kiln has enabled the company to guarantee earlier delivery dates on most of its insulator products, Mr Failmezger reported.

Three Manufacturers Act on Appliance Sales Drop

Three major appliance manufactures have taken measures to meet the decline in sales.

Westinghouse Electric Corp announced it will cut back production on several lines from 12 to 30%, effective April 1, and Frigidaire Division, General Motors, planned to lay off up to 1,200 workers on that date. Apex Electrical Manufacturing Co stated it was trying to realign its business to get back on a profitable basis by mid-year.

In announcing the Westinghouse cutback, J. H. Ashbaugh, vice-president in charge of the appliance division, stressed that refrigerator output will not be affected. The cut backs on other items, he added, is the result of heavy inventories and added that the reductions would be "gradual." Major appliances affected are electric ranges, automatic washers and clothes driers. Small appliances to be curtailed include roasters, sandwich grills, radiant heaters, waffle bakers, and hot plates. Continuing at present production levels are pop-up toasters, automatic food mixers, vacuum cleaners, and garbage disposal units.

C. G. Frantz, Apex president, predicted that the company will have losses to report for the first quarter of this year and most likely for the second quarter "at about the same rate of loss as we were showing profits in the comparative period of last year." Mr Frantz stated that beginning last November the home equipment business "ran into rough weather and it has shown only faint signs of recovering even at this date."

At Dayton, Ohio, Frigidaire officials said they would keep dismissals as far below 1,200 as possible. This, they said, would mean a furlough of less than 6% of the division's 20,000 workers.

•

Moves Eastern Division

Announcement has been made by the A. B. Chance Co, Centralia, Mo., of the transfer of their eastern division sales office from New York City to Philadelphia 2, Pa., 2003 Packard Bldg, 15th & Chestnut Sts. The new office will be

headquarters for the company's Eastern Division sales manager, C. T. Nevins, and other Eastern division salesmen covering the New England States.

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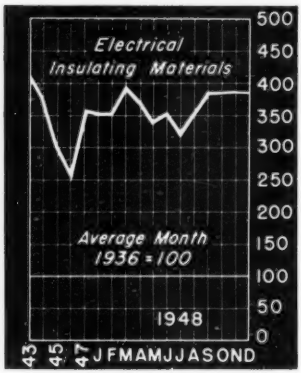
Insulating Material Sales Hold Firm in December

Sales billed on electrical insulating materials during the month of December, 1948, remained unchanged from



the preceding month, according to the index compiled by the National Electrical Manufacturers Association, which stood at 391.

The index for December 1947 was 353, the 1948 figure representing an increase of 11%.

•

Award Winners Announced in Lighting Exposition

The judges in the Merit Award Competition of the Third International Lighting Exposition have announced the names of the 220 winners of Gold Seal, Merit with Distinction, and Merit Awards. The exposition and competition were sponsored by the Industrial and Commercial Lighting Section of the National Electrical Manufacturers Association.

Among the winners of Gold Seal $100 awards in the Utility Lighting and Power Representatives Classification are the following:

Eugene M. Fahey and J. A. Heffernan, Public Service Electric & Gas Co, Newark, N. J. for a joint entry on Electrician's Shop; Walter E. Turnbull, Public Service Electric & Gas Co, Plainfield, N. J., joint with North Plainfield Board of Education, Owners & Users, Plainfield, N. J., for Classroom Lighting; Burdette E. Sanderson, Public Service Co of Northern Illinois, Joliet, Ill., for Bank.

NEW ELECTRICAL CONSTRUCTION

A weekly selection of U. S. electrical construction projects announced by private and government utility systems involving more than $70,000. Also listed are major industrial and construction jobs where electrical work is indicated or implied

UTILITIES

Proposed Construction

Arkansas—Clay County Electric Cooperative, Corning, rural distr. lines, Clay Co. **$615,000.** Southwest Electric Engineers, Jonesboro, consult. engrs.

Arkansas—Petit Jean Electric Co-operative, Clinton, 236 mi. rural distr. lines, other facilities, Conway Co., etc. $920,000. Southwest Electric Engineers, Jonesboro, consult. engrs.

Arkansas—Southwest Arkansas Electric Co-operative Corp., Texarkana, 200 mi. rural distr. lines and sys. imprvs., Miller Co. **$655,000.**

California—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., outdoor current transformers, for Davis No. 1 line at Parker 230-kilovolt switchyard, Davis Dam Proj., Spec. 2241. L. N. McClellan, ch. engr.

Colorado—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, transformers, circuit breakers, horn-gap switchers, outdoor switches, disconnecting fuses, fuse cutouts, lightning arresters, current and potential transformers for Akron and Yuma Substation, Colorado-Big Thompson Proj., Spec. R7-50 (Region 7). L. N. McClellan, ch. engr.

Fla., Key West—Pub. Wks. Office, U. S. Naval Station, Key West, electric power line from sub-station in Key West to power plant at Boca Chica Field, power Field, power, line from plant near east fueling area to Bldgs. 1002 and 1005 at Boca Chica Field; Imhoff type sewage treatment plant at U. S. Naval Air Station, Boca Chica Field, Plans deposit $10 each.

Idaho—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., one 3,333 kva, 132,000 grounded wye/76,300 to 33,000 delta-volt, single phase, 60 cycle, oil immersed, self-cooled, outdoor, power transformer, interconnection substation, Idaho Power Co., Minidoka Proj., Spec. 2609. Plans deposit 25c. L. N. McClellan, ch. engr.

Idaho, Arco — U. S. Atomic Energy Comn., 1901 Constitution Ave. N. W., Wash., D. C., atomic reactor testing station, 400,000 acre site, near Pocatello, **$100,000,000.**

Kentucky — Southern Kentucky Rural Electrification Corp., Somerset, rural distr. lines, sys. imprvs., Wayne Co. $790,000.

Ky., Hopkinsville—A. Wettstein, supt., and Bd. Directors, Electric Plant Bd., City Hall, electrical substation, equip., electrical voltage transformation bay for electric plant. Plans deposit $25. Allen & Hosahll, 65 McCall Pl., Memphis, Tenn., consult. engrs.

Missouri—Nodaway-Worth Electric Cooperative, Maryville, 461.51 mi. rural distr. lines, conversion 99 mi. in Page, Taylor and Ringgold Counties, $500,000. Frank Horton & Co., Lamar, engrs.

Nebraska — Eastern Nebraska Public Power Dist., Syracuse, sys. imprvs. over entire sys. in Saunders, Cass, Otoe, Nemaha, Richardson, Pawnee and Johnson Counties shop and headquarters bldgs., both distribution and transmission lines. **$1,680,000.** Henningson Eng. Co., Standard Oil Bldg., Omaha, consult. engr.

Neb., Grand Island—City, power plant imprvs. incl. boiler erection and setting, $87,500. Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs.

N. Y., Buffalo—Dpt. Mental Hygiene, Albany, medical and surgical bldg. $7,500,000; power house. Extended date. York & Sawyer, 101 Park Ave., New York, Zone 17, archts.

North Dakota — Burke-Divide Electric Corp., Columbus, 1,100 mi. rural distr. lines, Burke Co. **$1,640,000.** Ulteig Eng. Corp., Fargo, consult. engr.

O., Bellefontaine — City, Bellefontaine, water cooling tower, steam boiler generator and 12,000 kw hour turbine generator power plant. F. M. Baxley, chief utilities engr.

Oregon—Bonneville Power Admin., 729 **N. E. Oregon St.,** Portland, Zone 8, clearing 17 mi. right-of-way and constructing Albany-Lebanon 115 kv transmission line, Inv. 4543, Linn Co. Plans deposit $25.

Ore., Eugene—City, City Hall, headworks, etc. at Walterville Hydroelectric Station. Plans deposit $25. Cornell, Howland, Hayes & Merryfield, Corvallis, engrs.

South Dakota—Codington-Clark Electric Co-operative, Watertown, rural distr. lines, Codington Co. to Delta Constr. Co., Clarksdale, Miss., **$559,405.** Scott Eng. Co., Watertown, engr.

Tennessee—Forked Deer Electric Cooperative, Halls, 98 mi. power line and 2-way radio sys. **$375,000.** Sullivan & McWhorter, Stahlman Bldg., Nashville, engrs.

Virginia—U. S. Eng., foot of Front St., Norfolk, two 9,400 hp. hydraulic turbines, one 860 hp. hydraulic turbine and governors, Philpott Proj., Smith River, Serial No. Eng-44-110-49-160.

Washington—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point f.o.b. cars Yakima, outdoor power transformer; grounded-neutral circuit; ungrounded-neutral circuit mounted on the tank; outdoor power circuit breakers; outdoor disconnecting switches; outdoor horn-gap switches; outdoor current transformers; outdoor potential transformers, for line-to-line connection for Roza Switchyard, Roza Div. Yakima Proj., Spec. 2619.

Wash., Aberdeen—Bonneville Power Admin., 729 N. E. Oregon St., Portland, Ore., Aberdeen Substation, Inv. 4539. Plans deposit $25.

Wyoming — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars Casper, embedded material, one bus structure, three capacitor and wave trap supports, one capacitor tie-down frame and nine transformer tie-downs for switchyard at Kortes Power Plant, Kortes Unit, Missouri River Basin Proj., Spec. 2612.

Low Bidders & Contracts Awarded

Ill., McLeansboro—City, City Hall, 2 diesel engine generating sets for Municipal electric plant, to Enterprise Engine & Foundry Co., 18 and Florida Sts., San Francisco, Calif., **$159,975.** Awarded 3/14. S. J. Sibley & Assoc., 524½ E. Capitol St., Springfield, engrs.

Oregon—Bonneville Power Admin., 739 N. E. Oregon St., Portland, Mar. 15, 21.4 mi. Detroit-Lyons 230 kv transmission line, Inv. 4516, Marion and Linn Counties, from C. J. Montag, N. E. 78 and Halsey Sts., Portland, **$637,504.**

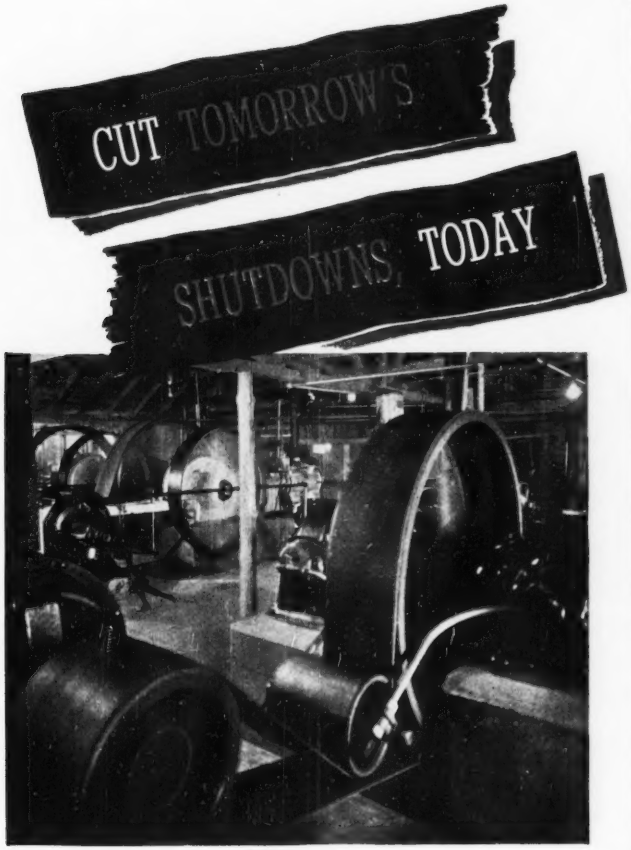
Tex., San Benito—Central Power & Light Co., 120 N. Chaparral St., Corpus Christi, addnl. enlargement La Palma Electric Power Plant, own forces, **$200,000.**

INDUSTRIAL, COMMERCIAL & PUBLIC BUILDINGS

Proposed Construction

Calif., Los Angeles—Bd. Regents University of California, 451 N. Hilgard St., plans by Wurdeman & Becket, 3757 Wilshire Blvd., Medical School, first unit, **$15,500,000;** L. T. Evans, 2500 W. 6 St., Los Angeles, consult. engr.; plans by Douglas McCellan, 816 W. 5 St., Los Angels, administration bldg., **$1,500,000.**

Conn., Hartford—Pub. Bldgs. Admin., F Ave. between 18 and 19 Sts. N.W., Wash., D. C., brick, steel, stone post office, **$7,000,000. FWA.**



Whenever wiring jobs come up, think beyond today's wiring needs—think in terms of cutting costly shutdowns—think in terms of maintenance-saving, time-saving Deltabeston* wires and cables. Make it a habit, wherever heat's a threat, to specify Deltabeston throughout, because Deltabeston wires and cables are made specifically to combat the effects of heat, moisture, and corrosive vapors; they give electrical systems protection from immediate hazards, and an extra margin of protection to cover future, unanticipated needs.

So whether you're rewiring an existing system or installing a system in new construction, don't overlook heat-beating Deltabeston. The Deltabeston line includes standards and "specials" for every combination of heat, moisture, corrosive vapor, or other conditions—for temperatures up to 200 C. It gives the system extra protection both on hot jobs and on ordinary installations. And, men who know your problems stand back of your Deltabeston supply source ready to advise you on selection.

For full information on Deltabeston, write to Section Y26-427, Construction Materials Department, General Electric Company, Bridgeport 2, Connecticut.

*TRADE-MARK REG. U. S. PAT. OFF.

GENERAL ELECTRIC

HI-AMBIENTS

Application hints on the complete Deltabeston line

FLEXIBLE HINGE CABLE for swinging panel connections and general switchboard work is available in the Deltabeston Switchboard Wire and Bus Cable line. Insulated with felted asbestos and covered with cotton braid with flame-resistant finish, it is essential for wiring switchboards up to 90 C (194 F).

SPREADING OUT. Originally designed for infrared oven use, silicone-treated Deltabeston cables proved so successful that now they're being used for both 300- and 600-volt service on many extra-high heat applications. On jobs where the temperature goes as high as 200 C (392 F), specify silicone-treated Deltabeston.

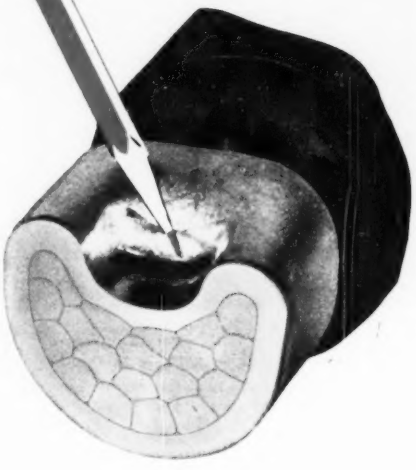
MOISTURE RESISTANCE is only one of many advantages Deltabeston power cable offers you. Like all Deltabeston products, it's a heat beater because it's insulated with purified asbestos. Varnished cambric and heavy braid or lead sheath help resist abrasion, flame, grease, corrosive vapors, and oil.

SIMPLIFIES SELECTION. To help in the selection of the proper Deltabeston magnet wires for the jobs you've got to do, General Electric has prepared the *Deltabeston Magnet Wire Booklet.* This handy guide contains facts on the many kinds of magnet wire made by General Electric, and includes a handy specification chart to make selection easy. For your free copy, write to Section Y26-927, Construction Materials Department, General Electric Company, Bridgeport 2, Connecticut.

Here's why

BURNDY HYDENT CONNECTORS

are superior mechanically... electrically

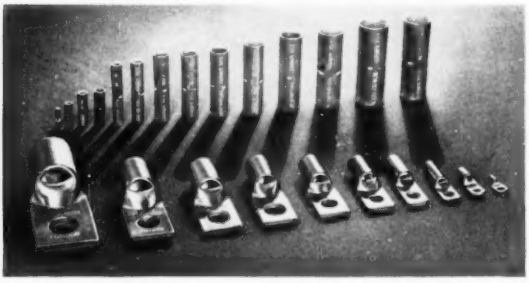


No art tricks . . . this is a cross section photo of a typical HYDENT connection.

Note how the conductor and connector have been compressed into an almost solid mass under high pressure by the Burndy HYPRESS or HYTOOL.

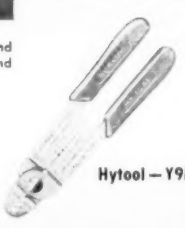
And there's no trick to cutting costs the modern HYDENT way. Just insert conductor, indent with the HYTOOL, and, *presto*, the job is done.

HYDENT connectors are available in all types for conductors #22 through 2000 Mcm . . . all one-piece, pure copper construction, heavily tin-plated. Catalog Y46 gives the complete story. Send for your copy today.



Hydent Connectors range from the smallest sizes used for control, instrument and electronic equipment wiring to the largest cable sizes required in industrial and utility power applications.

Burndy Hytools and Hypresses indent Hydent connectors onto all conductors from #22 to 2000 Mcm.



Hytool — Y9M

Hypress — Y34-A

Connect with

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THE UNIQUE COOLING SYSTEM of the new Allis-Chalmers tube-type, totally-enclosed, fan-cooled motor reduces maintenance to a point never before reached in totally-enclosed motor design. Tubes surround the stator. Internal fans circulate air within the motor to transfer heat to the tubes. An external fan moves outside air through the tubes to remove heat quickly and effectively.

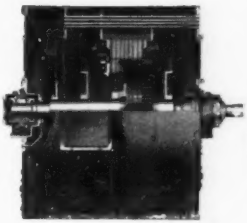
Maintenance Materially Reduced

The new Allis-Chalmers tube-type motor rarely needs cleaning because tubes are straight, the air passages unrestricted, and the cooling air flows at sufficient speed to carry foreign matter out with it. Should unusually dirty air conditions make cleaning desirable, tubes can be swabbed out quickly and easily. This new motor can be installed indoors or out in any atmosphere.

Cooling Efficiency Proved

Three years of successful field operation back up this new motor. For information, on how it can mean lower costs for you, contact your nearest A-C District Office or write for bulletins 51R7149 and 05B7150.

ALLIS-CHALMERS, 932A SO. 70 ST.
MILWAUKEE, WIS.



HOW TUBE-TYPE COOLING SYSTEM SAVES YOU MONEY ON MAINTENANCE

1. **LARGE HEAT TRANSFER AREA** of tubes plus efficient air flow removes heat quickly.
2. **STRAIGHT TUBES** do not normally clog or collect moisture and foreign matter.
3. **INTERNAL FANS** keep enclosed air constantly circulating, assuring even cooling and fast heat dispersal.
4. **EXTERNAL FAN** blows air through tubes to remove heat quickly and efficiently. Air speed keeps tubes clean.
5. **ALL ELECTRICAL PARTS ARE ENCLOSED:** Dirt cannot enter.

A-C ALLIS-CHALMERS

A 2647

ALLIS-CHALMERS

Recent C-E Steam Generating Units for Utilities

LOUISIANA STATION

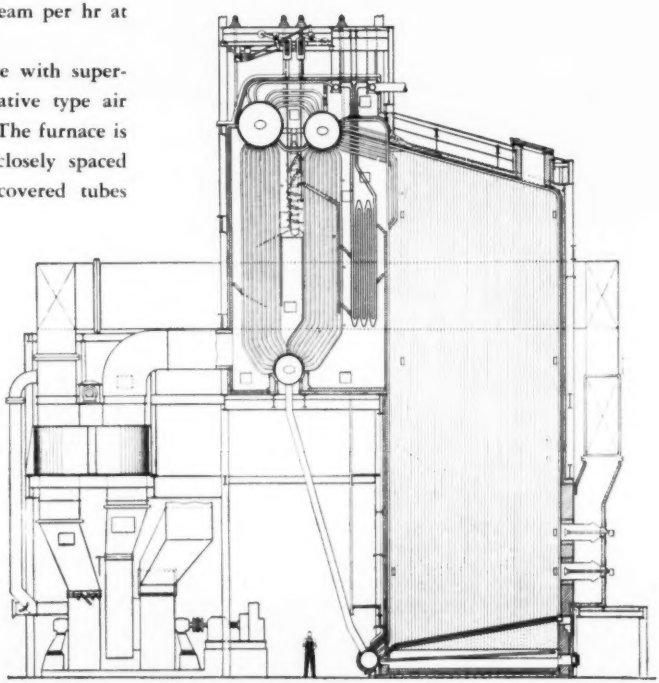
GULF STATES UTILITIES COMPANY

The C-E Unit, illustrated here, is now under construction for the Louisiana Station of the Gulf States Utilities Company at North Baton Rouge, Louisiana.

It is designed to produce, at maximum continuous capacity, 300,000 lb of steam per hr at 650 psi and 750 F.

The unit is of the 3-drum type with superheater in the first pass. Regenerative type air heaters follow the boiler surface. The furnace is completely water cooled, using closely spaced bare tubes, and has refractory covered tubes forming the bottom. This unit is arranged for firing oil and natural gas either separately or in combination.

Two additional C-E Units are on order for this station. They are designed for 400,000 lb nominal steam capacity at 875 psi and 910 F. B-303



C-E

Combustion Engineering–Superheater, Inc.

A Merger of COMBUSTION ENGINEERING COMPANY, INC. and THE SUPERHEATER COMPANY

200 MADISON AVENUE, NEW YORK 16, N. Y.

NEWS ABOUT PEOPLE

R. R. Habberley Assumes New Executive Duties

Robert R. Habberley has been elected a vice-president of the Western Massachusetts Electric Co, with headquarters

ROBERT R. HABBERLEY

at Greenfield. He will be responsible for supervision of the construction budget, direction of activities of the purchasing, real estate, and right-of-way departments, and co-ordination of general system activities.

Mr Habberley joined the company in 1930 in the electrical engineering department. Later he became superintendent of distribution, with headquarters at Springfield. In 1945 he was made assistant general superintendent of the company and in 1946 was made director of economics. He is now president of the Engineering Society of Western Massachusetts and is active in national utility circles.

•

George D. Olson has been appointed assistant to vice-president in charge of industrial relations of the Commonwealth Edison Co, Chicago. Mr Olson has been identified with the Chicago utility for more than 35 years.

Ellery R. Fosdick, assistant director of power utilization for the Bureau of Reclamation for the past five years, has resigned to join the consulting engineering firm of H. Zinder in Washington, D. C. During his service with the Bureau, he was especially active in that agency's planning of power facilities for the Missouri and Columbia River basins. Early in his career he was identified with the Washington Water Power Co and later opened his own consulting office in Spokane. In 1933 he became an engineer for the Washington Department of Public Service, where he remained until 1938, when he joined the staff of the Federal Power Commission. He was chief of electric rate investigations for FPC when he resigned to join the Bureau of Reclamation in 1945.

•

J. J. Knox Directs Moloney Capacitor Sales Division

John J. Knox, vice-president of the Moloney Electric Co, St. Louis, has been appointed head of sales in the company's new capacitor division.

Mr Knox has been connected with

JOHN J. KNOX

Moloney for the past 20 years. Starting in the testing department, he progressed successively through the engineering department to the production department as manager and then to the sales department. He was appointed a vice-president in 1945.

•

John J. Meadows has entered the mechanical engineering department of Sam Tour & Co, Inc, New York, which is now being reorganized under his supervision. Mr Meadows has had 30 years' experience in electrical and mechanical engineering. For the past five years he has been engaged in consulting work and has written numerous articles for technical journals.

Frank Kitzmiller Joins Commercial Staff of EEI

Frank Kitzmiller, Jr, formerly with the Duquesne Light Co, Pittsburgh, has joined the commercial department of the Edison Electric Institute.

In his new position, Mr Kitzmiller will

FRANK KITZMILLER, JR.

be active in residential and commercial electric cooking promotion, assisting EEI member companies in these fields. He will also devote much time to the Institute's new All-Electric Kitchen promotional program.

Following five years in military service, Mr Kitzmiller became identified with Duquesne Light in 1946, where he was engaged in sales promotional and dealer coordination activities. Born in Pittsburgh, Mr Kitzmiller was graduated from the University of Pittsburgh.

•

Dr Howard W. Emmons has been appointed Gordon McKay professor of engineering science at Harvard University. He is widely known in engineering and governmental circles for his work in supersonic wind tunnel research, fluid mechanics, aerodynamics, and combustion processes.

Philip Torchio, Jr. who has been assistant to the operating vice-president of the American Gas & Electric Service Corp, New York, for the past year, has been appointed assistant to the vice-president and general manager of the Ohio Power Co. Mr Torchio was formerly associated with Consolidated

Edison Co of New York, Inc, serving with them in various capacities in the generating, distribution, sales, purchasing, and engineering departments over a period of 16 years.

•

Florida Utility Announces New Engineering Set-Up

Reorganization of the engineering and operations department of the Florida Power & Light Co, Miami, has recently been completed.

With the resignation of J. Coleman Jones, superintendent of transmission, who has joined Pacific Power & Light Co, as assistant general superintendent, and P. J. Carlin, superintendent of distribution, who has joined Southeastern Utilities Service Co, these two offices have been discontinued.

Three new offices have been added to the staff of J. H. White, vice-president in charge of operations. They and their occupants include: transmission engineer, Neil Metz; distribution engineer, Ollie T. Ayers; and system engineer, R. A. Goodburn.

The offices of division distribution superintendent has been discontinued and the office of division superintendent added. The following are the division superintendents: J. P. Hanley, eastern; R. S. Davis, western; H. G. Williams, northern; Max V. Bose, southern; and J. T. Moore, commercial manager and superintendent for the northwestern division.

Division engineers include L. P. Browning, eastern; W. A. Haines, western; J. G. Spencer, Jr, northern (Daytona Beach); J. L. Munroe, northern (northwest area); and D. F. McConnell, southern.

OBITUARY

Dr Harvey C. Rentschler

Dr Harvey C. Rentschler, physicist and inventor, who was director of research for the lamp division of the Westinghouse Electric Corp in Bloomfield, N. J., for 30 years, died on March 23 after an illness of three months. Dr Rentschler was 68 years old. He retired in 1947.

Dr Rentschler developed the sterilamp, the first practical bacteria-killing lamp, and had more than 100 inventions patented. He pioneered in the applications of photo-electric cells, and it was his research in photo-electricity which led Dr Rentschler to explore the rare metals, thorium, titanium, tantalum and uranium as possible substances for lamp filaments.

His experiments in this field were

HARVEY C. RENTSCHLER

credited with having advanced atomic bomb research by at least a year.

Born on a farm near Hamburgh, Pa., Dr Rentschler was graduated from Princeton University in 1903 and obtained a doctorate in physics from Johns Hopkins in 1908. He joined the Westinghouse Research Laboratories in 1917 and established the Bloomfield laboratory several years later. After his retirement, he served as a visiting professor of engineering at Princeton.

•

Adolph Schlesinger, power sales engineer for the Public Service Co of Indiana and president of the Great Lakes Power Club, died on March 14 in Indianapolis. He was 72 years old. Mr Schlesinger entered the electric business in 1899 in Chicago, going to Indianapolis in 1904. He served as superintendent of electrical distribution for Indianapolis Railways and the Terre Haute, Indianapolis & Eastern Traction Co until the latter company was liquidated in 1931. Since then he had been engaged in contract sales work with cities and towns throughout Indiana.

Samuel E. Bramer, president of the Copperweld Steel Co, Pittsburgh, died on March 24 of a heart attack. He was 63 years old. Mr Bramer helped in 1915 to organize the steel company he headed at his death. He was the first vice-president and general manager and became president in 1929. Born in Warsaw, Poland, he came to this country as a boy.

William C. Madsen, branch manager of the Gary, Ind., office in the central western sales district of the Reliance Electric & Engineering Co, Cleveland, Ohio, died on March 8 in Cleveland. He was 30 years old. Following graduation from Case Institute of Technology in 1941, Mr Madsen joined Reliance as an electrical engineer.

Lester A. Magraw

Lester A. Magraw, president of the Central Illinois Public Service Co, Springfield, since 1932, died on March 25 as the result of an illness which began last September. He was 65 years old.

Before going to the Middle West, Mr Magraw had been prominently identified with the public utility industry in the South. He was serving as president of the South Carolina Power Co at the time of his appointment to the presidency of Central Illinois Public Service.

At first Mr Magraw was identified with the manufacturing branch of the electrical industry, his first connection being with the Crocker Wheeler Co in New Jersey. It was while he was engaged in work on steel development in

LESTER A. MAGRAW

high-tension electrical transmission equipment in Georgia and the Carolinas for Westinghouse that he transferred to the central station field as chief engineer of the Central Georgia Power Co.

Subsequently he became executive vice-president of Central Georgia Power, the Macon Railway & Light Co, and the Macon Gas Co. From 1928-1932 he was associated with the South Carolina Power Co, Charleston, first as vice-president and general manager and later as president.

At the time of his death, Mr Magraw was a member of the board of directors of the Edison Electric Institute and a member of the American Institute of Electrical Engineers and of the American Society of Mechanical Engineers.

•

Joseph B. Miller, manager of the New York office of the Electric Service Manufacturing Co, Philadelphia, died suddenly of a heart attack at his home in Belmont, Mass., on March 19. He was 57 years old. Mr Miller joined the company 29 years ago as a salesman.

NEW EQUIPMENT

Lightning Protector

TO SAFEGUARD METERS, industrial power service entrances, or consumer apparatus, a Thyrite lightning protector has been announced by General Electric Co's Transformer and Allied Products Divisions, Schenectady 5, N. Y.

Rated at 0-650 v, the unit is available for either indoor or outdoor installation on single or polyphase secondary circuits. Single, double or triple-pole assemblies are enclosed in aluminum cases, with provision for either nipple or bracket mounting.

•

Service Light

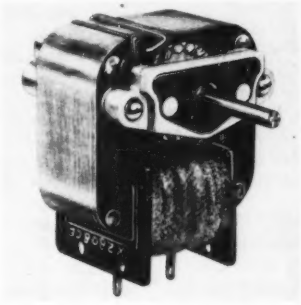
FEATURING a concentrating lens which produces a bright beam of light, an all-purpose service light is made by the Electrical Division of McGill Mfg Co, Inc, Valparaiso, Ind. A half-round reflector provides wide-area illumination.

Known as No. 505, the lamp has a universal mounting which permits adjustment 360 deg horizontally and 270 deg vertically. The spring steel feet, as well as the handle and cage, are detachable. The light is equipped with a 25-ft vinyl thermoplastic cord.

•

Shaded Pole Motor

TO ASSURE true alignment between rotor and stator, rigid, die-cast bearing brackets are used on Raytheon Model 230, shaded-pole, 3,200-rpm motor. A product of Russel Electric Co, 340 W. Huron St, Chicago 10, Ill., the unit is said to have 50% less rumble due to the maintenance of a uniform air gap.



Ratings are from 1/190 to 1/75 hp, continuous duty. Motors are available with two internal cooling fans and dynamically balanced rotor.

•

Lighting Fixture

AN EXPLOSION-PROOF lighting fixture has been designed for operation with about 10 lb air pressure in the lamp compartment. It is a product of Safe Lighting, Inc, 90-16 Astoria Blvd, Jackson Heights, N. Y. Development details were outlined in ELECTRICAL WORLD, March 26, 1949, page 114.

The unit is approved for Class 1, Group A and Group B hazardous locations. If the air pressure decreases to 3½ psi, the bellows-operated switches in the lamp compartment automatically open the circuit to the lamp.

Having an aluminum housing, the fixture weighs 9½ lb. Overall dimensions are 12 in. diameter and 22 in. high. An integral splicing box at the top has explosion-proof construction and is provided with a threaded outlet for connection to rigid conduit.

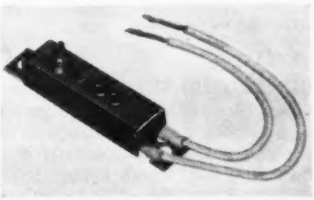
Metal reflectors are available in two sizes, one for 75 and 100-w, the other for 150 and 200-w incandescent lamps. Clear, frosted or concentrating glass lenses can be supplied.

•

Strip-Type Thermostat

ADAPTABLE for controlling surface temperatures, a housed strip-type thermostat rated at 1,500 w, 115/230 v a-c, is manufactured by the George Ulanet Co, 416 Market St. Newark 5, N. J.

Construction features include shielding of all live metal parts; nickel stranded Fiberglas-insulated lead wires; heavy duty, electrolytic silver contacts; and nickel plated housing. The thermal responding element is insulated from the switch and carries no current. Maximum operating temperature is 650 F.



ELECTRICAL BUSINESS OUTLOOK

SEASONAL PICKUP in general business should soon be starting. Spring weather usually brings out more retail trade, more new construction, and so more new orders for manufacturers. Business took a slightly more than seasonal dip in the first quarter of 1949. So there is some doubt about how strong the spring comeback will be. If the pickup in manufacturing and trade fails to materialize, that will be an indication that a major down trend has started. Then prospects for 1949 power sales would not be quite so bright.

Total power consumpton is still sliding seasonally, since warmer weather and longer days drop the heating and lighting load. But industrial sales should increase between now and the summer vacation months, if the normal seasonal pattern prevails.

Last year, the spring rebound was general throughout industry. Basic demand still outstripped supply in nearly every line. And the new rearmament and European recovery programs gave business a special boost. So did the cut in taxes. This year no such sudden rise in the demand for industrial products is in sight. And reappearance of buyers' markets for many items indicates that not all industries will participate in the upturn.

Prospects are still strong for the five industries which count most heavily in industrial power consumption (EW Mar. 19). Here is the near-term outlook in each of these fields:

The steel industry is expected to run on at capacity past the middle of 1949. Production of most nonferrous metals is leveling out, may ease slightly, although the aluminum makers will still be eager for all the power they can get.

Chemical output should hold near present levels and may inch upward in growing fields such as plastics and fertilizers. Somewhat lower activity seems likely in the petroleum and coal products fields. But paper and pulp mills may well show a seasonal increase in output.

GEOGRAPHIC AREAS have been showing marked differences in their level of business. And this helps explain why power consumption in some regions is showing smaller gains over 1948 than in others. In New England, where industrial sales are actually lagging behind last year, shoe and textile plants have been operating at a much slower rate. Brass mills and metalworking plants have also cut operations.

Power consumption has shown similar signs of leveling all along the Eastern Seaboard, where textiles, shoes, pulp and paper, and light metalworking lines are important. All these industries have reduced production some in recent months.

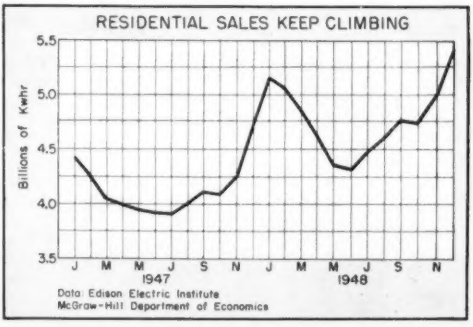
Power demand should continue strongest in the Central States. The steel and heavy machinery industries are still going strong in the Midwest. So is the important automobile industry. In the Southwest, production of petroleum, gas, and chemical products show similar strength.

RESIDENTIAL SALES wound up 1948 at a level 15% above the previous year. Sales in nearly every month ran about that much ahead of 1947 figures, with a higher increase shown only in the exceptionally cold February and March of 1948. In other words, the rate of gain was consistent throughout the year.

It's still too early to tell whether similar residential gains can be made in 1949. Warm weather in February and March certainly narrowed the margin of power use over those same colder months of last year. Moreover, continued gains depend largely on continued new home construction, and the outlook for housebuilding won't be clear until spring lets the builders get to work in earnest.

Last year's homebuilding came to a record total: 925,000 new dwellings started. The experts are doubtful that so many will go up in 1949. Most are expecting a 10% drop in new housing starts. That would cut down the increase in residential customers later this year. But many of the 1948 starts are still being completed. They will show up as additions to the power load in early 1949.

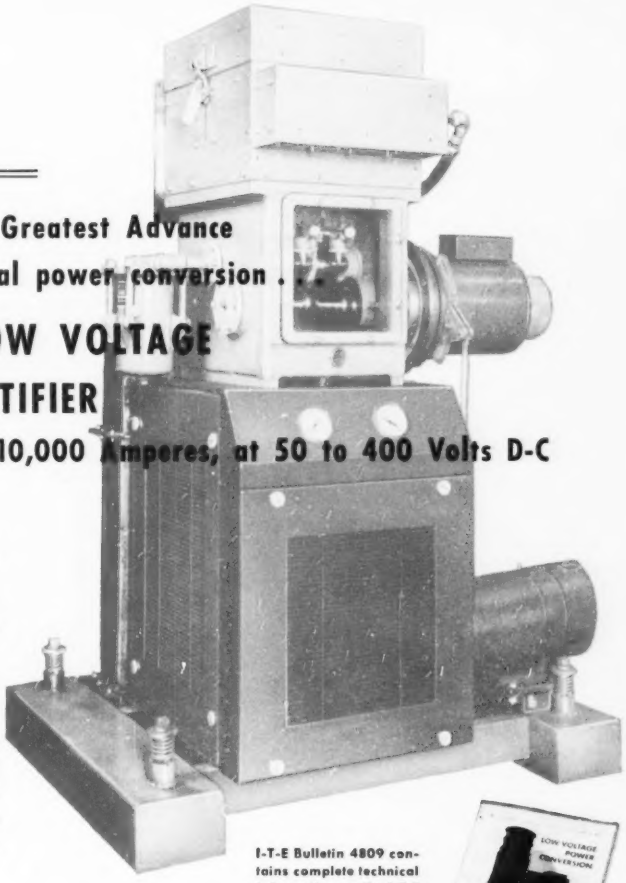
It's just possible that builders can keep volume up in 1949 by selling more houses at lower cost. If so, the number of residential customers will still be increasing rapidly.



Presents Engineering's Greatest Advance in the field of electrical power conversion . . .

THE NEW I-T-E LOW VOLTAGE MECHANICAL RECTIFIER

for applications up to 10,000 Amperes, at 50 to 400 Volts D-C



FIRST SUCH UNIT IN AMERICA NOW INSTALLED AND OPERATING!

THE MECHANICAL RECTIFIER made its debut and became a reality in this country on February 8th, 1949, when a unit rated 3500 amperes was placed in service in the plant of the Buffalo Electro-Chemical Company, Buffalo, N. Y., carrying 5000 amperes at 260 volts d-c with an efficiency of 96%.

GET THE COMPLETE STORY!

I-T-E Bulletin 4809 contains complete technical information on the I-T-E Mechanical Rectifier, as well as a detailed presentation of its operating principles. Send for it today!

NOTE THESE SIGNIFICANT ADVANTAGES:

1. *Higher operating efficiency*—actually 92% to 96.5% in the 50 to 400 volt range! You don't have to resort to high voltage to obtain high efficiency, if you use the I-T-E Mechanical Rectifier.
2. *Reduced Size.* A typical plant layout will show space savings of up to 50%. Consider what this means to you in decreased building costs.
3. *Simplified Maintenance.* No complicated tools or instruments are needed for the adjustment and maintenance of the new I-T-E Mechanical Rectifier.
4. Low over-all cost. Unit assembly at factory reduces installation cost. NO CRANE SERVICE is required in Rectifier Building.

MECHANICAL RECTIFIERS

I-T-E CIRCUIT BREAKER COMPANY, 19th & HAMILTON STS., PHILADELPHIA 30, PA.

CIRCUIT BREAKERS • SWITCHGEAR • UNIT SUBSTATIONS • ISOLATED PHASE BUS STRUCTURES • MECHANICAL RECTIFIERS

Select from Complete Line *OF STANDARD RATINGS!*

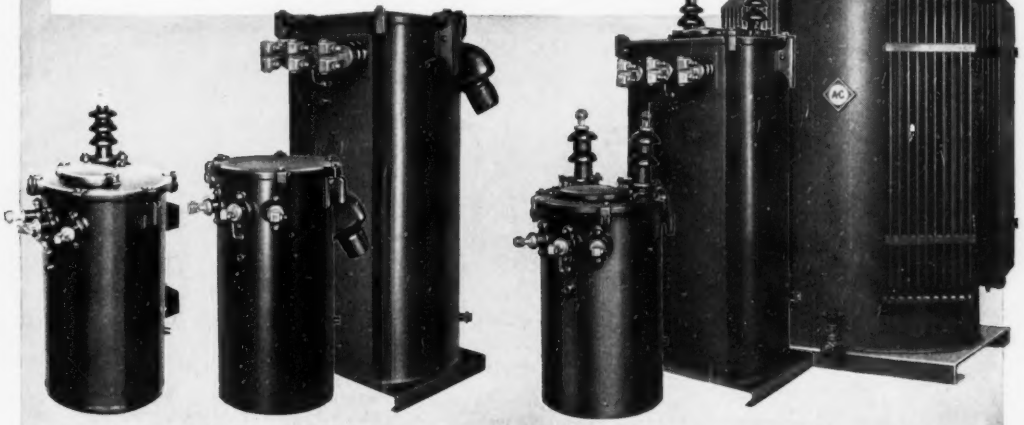
KVA	4800 VOLT AND BELOW	7200 VOLT AND UP
3-25	—	CBS-1
3-100	PBS	CBS
167-500	CBS	CBS

KEY TO TYPE DESIGNATION

CBS-1 Single high voltage cover bushing with low voltage stud bushings in tank wall.

PBS High voltage pocket bushings with low voltage stud bushings in tank wall.

CBS High voltage cover bushings with low voltage stud bushings in tank wall.



Type CBS-1 Type PBS Type CBS

Allis-Chalmers Distribution Transformers

EVERY RATING AND DESIGN of distribution transformer listed in the Fourth Report (1948) of EEI-NEMA can be supplied by Allis-Chalmers!

Size and weight of these transformers have been reduced as much as ⅓, making them easier to handle during installation.

All tanks are given Spra-Bonderized surface treatment . . . a hot dip phosphate process which protects against corrosive atmospheres.

Heavy gauge steel tanks are seam welded and pressure tested at 50 psi. to insure permanent protection against leaks.

For more details about these and other features of Allis-Chalmers distribution transformers, ask your nearby sales representative for the complete 12-point construction story. Or write for bulletin 6159A. A 2657

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MILWAUKEE, WIS.

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